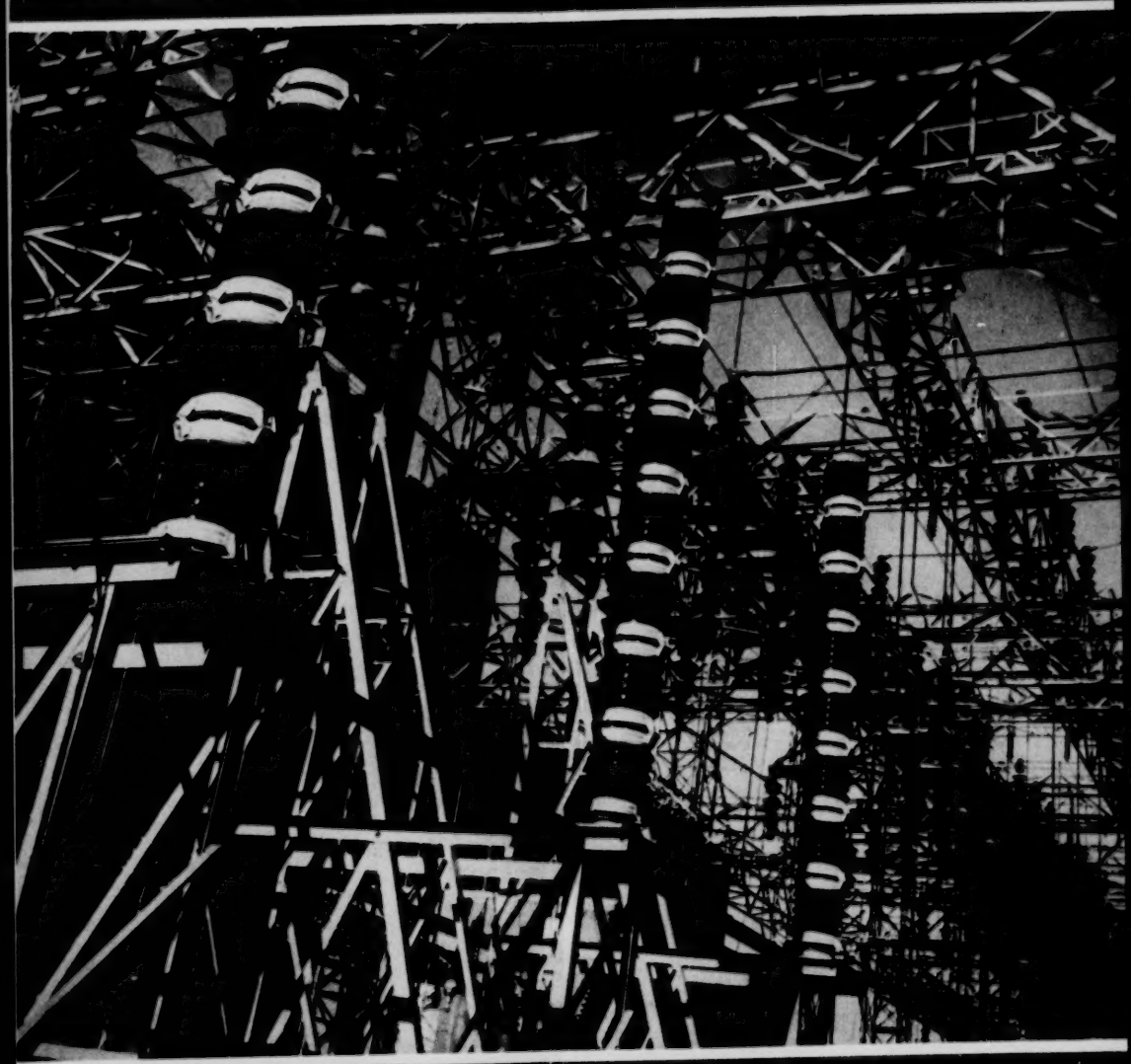
Standardization

News Magazine of the American Standards Association, Incorporated



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Company Members—More than 2000 companies hold membership either directly or by group arrangement through their respective trade associations.

Marginal Notes

The Standards Engineer—

Two meetings discussed in this issue call attention to the changing status and function of the Standards Engineer. These are the meeting of the Standards Engineers Society (page 155) and the two-day meeting of the Company Member Conference (page 154).

The Society has as its members individuals who are interested in the development or use of standards. Its next meeting, to be held in New York, will feature a talk on Materials Standardization as a Means to Cost Reduction and Conservation by T. C. DuMond, editor of *Materials and Methods*. Its previous meeting, in Philadelphia, featured a discussion on the impact of consumer standards on business. This is an indication of the wide range of material to be taken up by the Society members.

The Standards Engineers Society is still an infant in comparison with other engineering societies. However, it is already helping to pull into a cohesive group those individuals who are responsible for developing standardization philosophies and techniques. Standards Engineers themselves might be eligible to affiliate with any number of engineering organizations, purchasing associations, or other technical groups. They are finding it advantageous, however, to join with other standards engineers to discuss general ideas and policies which help to interpret the world as it exists in terms of the work they are attempting to accomplish.

The Company Member Conference is more closely tied in with work on nationally recognized standards. It brings together those men who are responsible for the use of standards in companies that are members of the American Standards Association. They are interested in standards not only from the individual point of view, of the company point of view, but also from the point of view of industry relations and national policy. This is reflected in the program

planned for the next meeting of CMC in Norfolk in May. The relation of Government standards to standards developed and used by industry will be the theme. Rear Admiral Joseph W. Fowler, who is in charge of cataloging and standardizing activities in the Munitions Board, will address the group. Those attending will have first-hand evidence of how Government standards are put to work in their visit to the aircraft carrier *USS Midway* and to the Norfolk Naval Base. Representatives of the naval activities visited will explain their installations. T. D. Jolly, vice-president of the Aluminum Company of America, ASA past president, will present industry's point of view.

The Conference is already making arrangements for its meeting in September. It is sponsoring the opening session of the Third National Standardization Conference, being held in conjunction with the Centennial of Engineering in Chicago, September 8-10. The keynote speaker at the Conference will be the principal speaker at this CMC meeting.

Our Front Cover

This substation, made up of circuit breakers, lightning arresters, distribution and power transformers, and the steel framework supporting them, is symbolic of the complicated interrelation of the many fields of electrical engineering. Standard definitions and agreement on standard terms encourage exchange of information that helps to maintain the electrical industry as one of the most vital and expanding industries in the world today.

The scene pictured on our cover is the switchyard of the Georgia Power Company's Atkinson Plant.

Photo by Gabriel Benzur

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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ASA

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Chester Laurens Dawes, Associate Professor of Electrical Engineering, Harvard University, is a man of versatility. He is engaged in many activities in the engineering field, in addition to his academic work and the encouragement he has given to both ASA and IEC on standard definitions of electrical terms. See "Personality of the Month," page 157.

What Prospect for a World-Wide Electrical Vocabulary?

As chairman of Sectional Committee C42 on Definitions of Electrical Terms, Professor Dawes, Undergraduate School of Engineering, Harvard University, keeps his fingers closely on the pulse of his committee's activities. As he explains here, Committee C42 is currently revising the widely used American Standard Definitions, C42.1-1941, to recognize important developments that have taken place in all phases of electrical engineering during and since World War II. Although the entire electrical vocabulary of some 4,000 words (contained in the 1941 edition) is being thoroughly reviewed and many additions have been made in the fundamental definitions, particular interest centers on new fields such as electronics, television, and nuclear physics. These have brought into the language many terms not in existence when the 1941 Definitions were published. Reports indicate that the new edition now being completed by Committee C42 will probably contain twice the number of terms as were in the 1941 edition.

In addition to its work on the American Standard, the C42 committee represents the American viewpoint on electrical definitions presented for international agreement in the International Electrotechnical Commission's Committee on Vocabulary.

The two articles published here on national and international work on electrical definitions are also being published in the May issue of *Electrical Engineering*.

The Vocabulary of the International Electrotechnical Commission

by Chester L. Dawes

THE International Electrotechnical Commission was founded as a result of the following resolution passed at the meeting of the International Electrical Congress, held in St Louis in 1904:

"That steps should be taken to secure the cooperation of the technical Societies of the world by the appointment of a representative Commission to consider the question of the standardization of the Nomenclature and Ratings of Electrical Apparatus and Machinery."

It was not until 1910, however, that the IEC appointed a Nomenclature Committee for the purpose of drafting an international list of terms and definitions relating primarily to electrical machinery. At that time both national and international standards were in their infancy and the Nomenclature Committee was embarking on pioneer work; also, at that time, the importance of this work was not fully realized. The first list of terms was adopted at a plenary meeting in Berlin in 1913. The work was resumed in Brussels in 1920 with the result that at meetings held at The Hague in 1925 and at New York in 1926 the committee found it possible to agree on certain principles to follow in drafting an International Vocabulary. At the plenary meeting in Bellagio in 1927, decided progress was made when agreement was reached on a system of classification into groups and sections and a system of numbering the groups, sections, and individual definitions. This is the system now in use.

The actual preparation of the definitions in IEC is conducted by Committee No. 1, Nomenclature, the present chairman of which is General E. E. Wiener of Belgium. The Commission is made up of National Committees, one of which is organized in each representative country. Following 1927, meetings of Committee No. 1 were held once or twice a year to 1937. Through the efforts of the several National Committees, as well as other international organizations, the work throughout this period progressed rapidly. In 1938, the present edition of the International Electrotechnical Vocabulary was published. It goes far beyond the early conception of limiting the definitions to electrical apparatus and machines. There are 14 groups, or major categories, divided into about 100 sections and there is a total of nearly 2,000 terms, including general and fundamental terms as well as those associated with apparatus and machinery. The terms are defined in the two official languages, French and English, and each definition is accompanied by its title translated into German, Italian, Spanish, and Esperanto.

This edition has served admirably as an authoritative reference of electrical terms; but its one great accomplishment has been that for the first time the National Committees of the several countries became a unified working group able to produce a vocabulary of definitions of electrical terms on which international agreement could be reached.

Among the handicaps under which this first vocabulary had been prepared was the lack of adequate representation on the part of the United States. The burden of representation as well as leadership in advancing the project were carried by Dr C. O. Mailloux and Dr Arthur E. Kennelly, both outstanding American scientists and leaders in electrical engineering. However, as able and industrious as these two men were, it was impossible for them to be authorities in the details of the large number of definitions involved in the numerous fields included in the fourteen groups and their several sections. Moreover, no two persons could possibly find the time which such an involved activity requires. The United States is taking a much more active interest in the current revision of the Vocabulary, however.

A few years after the 1938, or first edition of the Vocabulary had been published it was realized that it could profitably be improved and expanded. As has already been pointed out, preparation of the Vocabulary was a pioneer project with no previous experience to guide it. Moreover, as with the American Standard Definitions of Electrical Terms, the tremendous advances in science and engineering during and after the war had correspondingly increased the number of new electrical terms. Hence, at the meeting of IEC in Stresa, Italy, in 1949, it was voted to proceed with a revision. At this and subsequent meetings, the definitions were divided into 21 groups and the National Committee of each of the different countries was entrusted with the preparation of certain of these different groups. In Table I are given the group number and title, and the National Committee to whom the preparation of the several groups is entrusted.

It will be noted that the numbers of the different groups are, almost without exception, different from those of corresponding groups in the American Standard Definitions of Electrical Terms. Also, in some instances, subjects included within one American group are subdivided among two or more of the international groups. For example, electroacoustics, transconductors, (magnetic amplifiers), telegraphy, telephony, radio-communication, and wave guides are all included within the single American group, "Electrocommunication," but each is a separate group in the international defi-

nitions. On the other hand, in the American definitions, "Rotating Machinery" and "Transformers, Regulators, Reactors, and Rectifiers" are each a separate group whereas in the international definitions "Machines, Transformers and Mutators (Rectifiers)" are a single group. In the American Standard the general definitions of relays are given in the group, "Switchgear," and special types and applications are defined in other groups with which they are associated. In the international definitions relays are all included in a single group, and so on.

On the other hand, the American definitions have groups not included in the IEC Vocabulary, such as "Transportation (Land, Marine, Air)," "Electrical Welding and Cutting"; "Mining"; and "Miscellaneous," although the IEC does include "Electric Traction."

The USA is entrusted with the preparation of four international groups, "Electronics," "Electrochemistry and Electrometallurgy," "Radiology," and "Electrobiology." This responsibility falls directly on the U. S. National Committee (USNC), of which Dr Harold S. Osborne is president, and J. W. McNair, secretary. As the USNC is affiliated with the American Standards Association, the machinery through which this work is done is the same as that used in national standardization. For nomenclature and definitions, this means that the work is carried on by Sectional Committee C42 and its subcommittees which are currently engaged in the revision of the American Standard Definitions of Electrical Terms. Moreover, the chairman of the C42 Committee is a Technical Advisor of Committee No. 1 (Nomenclature) of the IEC and accordingly is the official U. S. representative on that committee. Hence, he shares in formulating its general policies. The chairmen of the subcommittees of Committee C42 are also Technical Advisors to IEC Committee No. 1 and hence are eligible to contribute to the preparation of IEC definitions. Also, J. W. McNair, in addition to being secretary to the USNC, is also secretary of the Electrical Standards Committee of ASA. This committee has general responsibility for the work of ASA electrical standardizing committees, of which C42 is one. Accordingly, there is a very close interlocking between Committee No. 1 of IEC, the USNC, and ASA Committee C42. As a result, this latter committee becomes not only the natural but the official U. S. agency directly responsible for U. S. participation in the definition activities of the IEC.

Thus, when the United States was entrusted with the preparation of four groups of the Vocabulary it was most appropriate as well as convenient to request the chairman of the appropriate C42 group to assume the responsibility. Already S. B. Ingram of the Bell Telephone Laboratories, chairman of C42 Subcommittee No. 14, on Electronics, has submitted to IEC the 07 group; and Dr G. W. Vinal (retired), of the National Bureau of Standards, chairman of C42 Subcommittee No. 12 on Electrochemistry and Electrometallurgy, has submitted to IEC the 50 group on Electrochemistry and Electrometallurgy. Dr M. D. Schulz of the Massachusetts General Hospital, chairman of C42 Subcommittee No. 15 Radiology, and Dr F. T. Jung, chairman of C42 Subcommittee No. 16 on Electrobiology, have both nearly completed their groups of definitions. These are to be submitted shortly to IEC.

In addition to the fact that different individual countries are entrusted with the initial preparation of one or more groups of definitions, all countries having membership in IEC share the responsibility of bringing all the definitions to their ultimate approved form. Accordingly, after the National Committee of a country has submitted to IEC the group of definitions entrusted to it, the definitions are reproduced in the two official languages, French and English. The corresponding terms in the two languages are arranged in two parallel columns. These reproductions are then circulated through the several constituent countries for review. After the lapse of a reasonable time, meetings of so-called Preparatory Subcommittees are held, to discuss and if possible come to agreement on the group under consideration. The membership of a preparatory subcommittee is made up of delegates from the several constituent countries. It may be necessary to hold more than a single meeting of a subcommittee before a group can be brought to the status in which it is ready for approval.

During the past summer a meeting of IEC was held early in July in Estoril, a seaside resort on the coast

Table I

No. and Title of Group	Nat Com to which Entrusted
05 Fundamental definitions	France
07 Electronics	USA
08 Electro-acoustics	Italy
10 Machines, transformers, and mutators	France and Sweden
11 Transductors	Sweden
12 Relays	Sweden
15 Switchboards and apparatus for connection and regulation	Italy
20 Apparatus for scientific and industrial measurements	France
25 Production, transmission, and distribution of energy	Italy
30 Electric traction	France
31 Signalling and other safety apparatus for railways	France
35 Electro-mechanical applications	Switzerland
37 Servo-mechanisms	United Kingdom
40 Electro-heating applications	Norway
45 Lighting	Switzerland
50 Electrochemistry and electrometallurgy	USA
55 Telegraphy, telephony	United Kingdom
60 Radio communications	United Kingdom
65 Radiology	USA
70 Electrobiology	USA

of Portugal, about 15 miles from Lisbon. Committee No. 1 as a whole met on two occasions during the week to discuss and arrange general policies and to determine the time schedule of the several groups. During most of the period, there were meetings of the Preparatory Subcommittee, 07 on Electronics, and 10 on Machines, Transformers, and Mutators. U. S. delegates on Subcommittee 07 were Dr H. S. Osborne, J. W. McNair, and Professor C. L. Dawes; U. S. delegates on Subcommittee 10 were H. R. Arnold, Dr H. S. Osborne, and C. F. Wagner.*

Owing to the fact that both France and England proposed to submit for consideration a substantial number of additional terms yet to be defined, and that it became necessary to make arrangements with other groups, such as Illumination and Radiology, as to which groups should be assigned certain terms which were more or less overlapping in their scope, it was decided that another meeting of Preparatory Committee No. 07 would be necessary.

On the other hand, it was possible to bring nearly to completion the draft of Group 10, which has been under consideration for a longer period than 07, so that with some minor and editorial changes, it could be translated and finally approved.

The next meeting of IEC, which may include Committee No. 1, will be held at Scheveningen, Netherlands, in September, 1952. Before that time other groups of definitions will be circulated among the several countries for review. Meetings of several of the preparatory subcommittees are to be held at Brussels during May. Hence, the work is progressing quite satisfactorily.

It is obvious that the foregoing system of organization brings the United States and IEC committees preparing definitions into very close relationship and facilitates agreement between corresponding American and IEC terms. Moreover, during the present revision, the subcommittees of C42 Sectional Committee have consulted the IEC definitions in preparing proposed American Standard definitions. Whenever possible, they have brought the two into agreement. Likewise, in the current revision of the IEC Vocabulary, the several IEC subcommittees have had access to the revised C42 definitions and have taken them into consideration. It is not always possible, however, to bring all definitions of the same terms into agreement, although frequently the differences are only in wording. The United States revision began some time before that of IEC, and it was impracticable to delay many of the groups until the corresponding IEC groups had been completed. Also, apparatus and practices in the U. S. are often different from international ones; the definitions, therefore, must be different.

American Telephone and Telegraph Company—Long Lines Information Department

A section of AT&T's overseas operating room. The "know-how" which has led to greatly improved service between countries calls for a thorough understanding of technical terms in the communications field.

Representation by the United States in the international meetings on definitions involves a substantial amount of time and expense since most of these meetings must be in Europe. It is important to have at these meetings men who are thoroughly competent in the fields to be discussed and preferably men who are active on the American committees dealing with these groups of definitions. Although General Wiener has most considerately offered to schedule such meetings to meet the convenience of U. S. delegates, it is not easy to secure adequate U. S. representation at all the meetings. Each country does have the privilege of submitting written comments; experience shows, however, that this is far less satisfactory than personal representation in which differences of opinion can be resolved by personal discussion.

In spite of the time and expense involved, the interest of American industry and other organizations in this country have led them to respond favorably to requests to assign members of their organizations to attend most of the group meetings. This representation has included several members of the C42 Committee and others. In addition, U. S. experts have already submitted many written comments and suggestions. Hence, the United States is contributing actively and systematically in the preparation of the second edition of the IEC Vocabulary.

* U.S. delegates to meetings of other IEC committees were V. L. Cox, C. W. Falls, C. M. Laffoon, E. F. Seaman, R. C. Sogge, W. C. Wagner and Vice Admiral G. F. Hussey, Jr. See "Progress on International Agreements," STANDARDIZATION, November 1951, p 354.

Revision of American Standard Definitions of Electrical Terms

by Chester L. Dawes

AFTER some twenty years of preparation the first edition of the American Standard Definitions of Electrical Terms was issued in 1941. The scope of this project, ASA C42, is as follows, "Defining correlation of definitions and terms in existing standards." The objective is to express for each term the meaning which is generally associated with it in electrical engineering in this country.

The desirability, in fact the necessity, for a glossary of this character need hardly be emphasized.

Precise and authentic definitions of electrical terms are highly essential in the art and practice of electrical engineering, in scientific publications and text books, specifications, contracts, and other legal documents, as well as in litigation. Such a glossary fulfills for electrical engineering the function of an authentic English dictionary and it is intended to be the ultimate authority in the definition of any electrical or related quantity.

In view of the rapid and extensive developments in science and technology which were taking place even before this first edition was issued, and which were greatly accelerated by the war effort, it became apparent that this first edition fell far short of including the many new terms which had come into being. The many new developments had so changed the scope and meaning of many of the existing terms that their definitions were either inadequate or no longer valid.

Hence, almost immediately after the end of the war, in 1946, the AIEE Standards Committee authorized the revision of the Definitions, the AIEE continuing as sponsor, and the writer was appointed chairman of ASA Sectional Committee C42 under whose direction the revision was to be made.

The chief purpose of ASA is "to provide systematic means by which organizations concerned with standardization work may cooperate in establishing American Standards in those fields in which engineering methods apply, to the end that duplication of work and the promulgation of conflicting standards may be avoided." This, in effect, means that in the preparation of an American Standard, all organizations having any substantial interest in the subject matter of any standard under preparation or revision should be represented.

There is certainly no electrical standard that is so far-reaching into so many fields as this glossary of electrical definitions. Moreover, it is highly important that when a term is defined, every possible usage be taken into consideration. Hence, in the organization of the Sectional Committee every effort was made to include within its membership representatives of all organizations who might have any material interest in electrical terms and quantities and their applications. In addition to the several scientific, engineering, and manufacturing organizations which are represented, many government agencies are included, such as the National Bureau of Standards, Bureau of Mines, the Army, the Navy, and the Air Force. The Canadian Standards Association and Mexico each has a liaison representative.

The sectional committee is the authoritative body which is responsible for the project, and the definitions must be approved by it before they become official.

The committee has appointed 18 subcommittees, each responsible for one category, or "Group" of definitions. Each subcommittee has a chairman who is responsible for the work of the subcommittee. He ap-

Group No.	Subcommittee and Title	Chairman
05	1 General (fundamental and derived) terms	J. D. Tebo
10	2 Rotating machinery	E. B. Paxton
15	3 Transformers, regulators, reactors, and rectifiers	J. E. Clem
20	4 Switchgear	H. J. Lingal
25	5 Control equipment	G. W. Heumann
30	6 Instruments, meters, and meter testing	F. B. Silsbee
35	7 Generation, transmission & distribution	A. A. Johnson
40, 41, 42	8 Transportation	H. C. Griffith
41	Air transportation Subgroup	K. R. Smythe
Section 10		Sterling Beckwith
45	9 Electromechanical applications	R. W. Clark
50	10 Electric welding and cutting	H. Reinhardt
55	11 Illuminating engineering	G. W. Vinal
60	12 Electrochemistry and electrometallurgy	E. I. Green
65	13 Communication	S. B. Ingram
70	14 Electron tubes	Dr M. D. Schulz
75	15 Radiology	Dr F. T. Jung
80	16 Electrobiology including electrotherapeutics	E. J. Gleim
85	17 Mining	R. L. Lloyd
95	18 Miscellaneous	

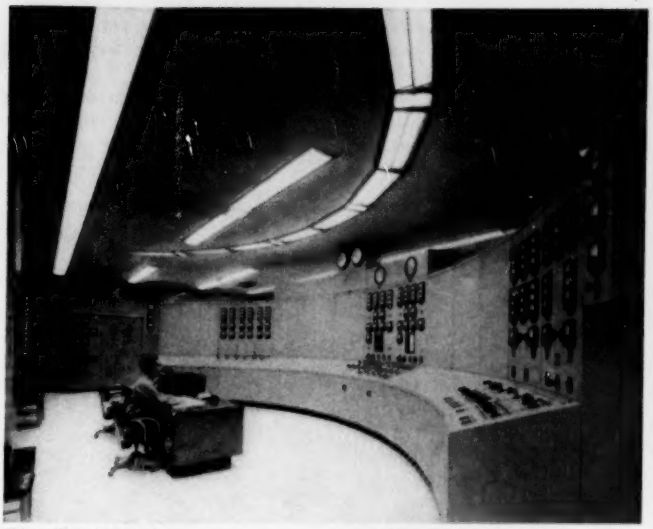
points the members of his subcommittee and may organize it in any manner he sees fit. For example, some subcommittees have vice-chairmen and secretaries. Also, it is common practice to assign the work of certain sections, such as mathematics, units, nucleonics, to individual members who may be specialists in these fields. See subcommittee list, p 136.

It is not only important that all phases of electrical applications be represented on the sectional committee but it is equally important that the members of the subcommittees be recognized authorities in the several fields which are represented. The wide representation which is necessary is better understood when it is realized that electrical power and phenomena have invaded nearly every field of engineering and scientific endeavor. For example, electrical power is actively employed in such fields as land, sea, and air transportation, illumination, electrochemistry, and metallurgy, radiology, electrobiology, and mining, none of which in itself is electrical engineering. For example, among subcommittee members may be found automotive, nautical, aeronautical, mining and illumination engineers, electrochemists, physicists who are authorities in light, radiation, x-ray and gas discharges, x-ray specialists who are expert—some in the physical aspects of radiology—and Doctors of Medicine who are expert in the applications of electricity to electrotherapy and electrobiology. In fact, in these last two fields we could have accomplished little without having obtained assistance from the American Medical Association, an organization which seems far removed from electrical engineering. Through its cooperation we have obtained the services of Dr M. D. Schulz and Dr F. T. Jung as chairmen of the subcommittees on radiology and electrobiology.

It is almost needless to point out that innumerable quantities, other than electrical, are measured by electrical means, so that the field of electrical measurements is a horizontal one of great breadth, extending well into the fields of nearly every science, such as physics, chemistry, metallurgy, geology, and into nearly all the fields of engineering, such as mechanical, chemical, and mining. This illustrates, I believe, the wide representation that is necessary in a single subcommittee, such as the one which has prepared the definitions on electrical instruments and meters.

The science of electrical engineering depends to a large extent on mathematics, and, as is well known, many special mathematical techniques particularly adapted to electrical phenomena have been developed. Hence, in the preparation of the definitions, we have been obliged to seek the assistance of mathematicians and the American Mathematical Society is represented on the sectional committee. It is well known that since the 1941 edition, the fields of electronics and wire and radio communication have expanded tremendously; the new terms to be defined have correspondingly increased. The definitions of these terms have been greatly facilitated by the close coordination which has been developed between our subcommittees and the standardizing committees of the Institute of Radio Engineers. We are greatly indebted to IRE for the support which it has given this project.

In very recent years there have developed several entirely new fields and new techniques, such as magnetic amplifiers, servomechanisms, nucleonics, electronic and digital and analogue computers. With fluorescent and other new types of luminants, the field of illumination now extends deep



Edison Electric Institute

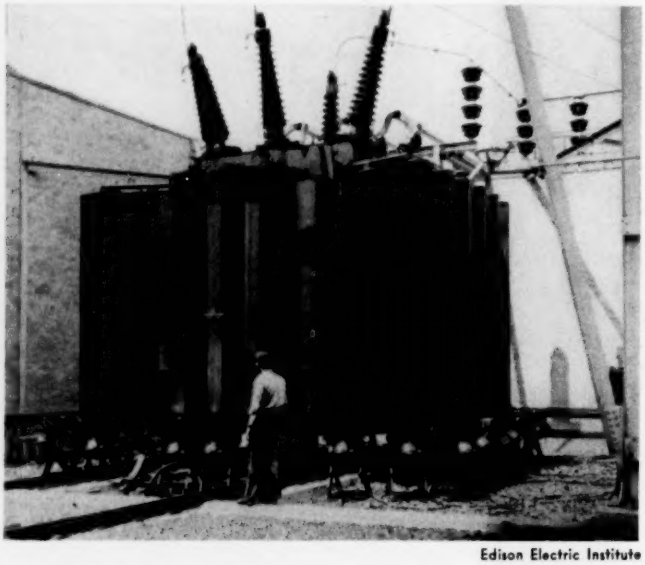
Bell Telephone Laboratories

Above: Streamlined in appearance as well as in operation, this Control Room of the Potomac River Power Plant of the Potomac Electric Power Company at Alexandria, Virginia, uses modern indicating instruments and automatic switchgear. Right: One of the 107 stations on AT&T's Long Lines microwave radio-relay system which has made cross-country television programs possible.

into the fields of gas discharges, fluorescence, and radiation, so that extensive representation in the field of physics was highly necessary. Acoustics has reached well into the electrical field; in the electrical definitions, on account of the overlap, it is difficult to know where to delineate between electro-acoustical and purely acoustical terms.

The foregoing is intended to show the wide scope and the large number of fields of engineering and science which the definitions embrace, and also the large number of authorities in these several fields whose services we have been obliged to enlist in order that the definitions may be complete as well as authoritative. We are all indebted to the several subcommittee chairmen and the members whose time is necessarily valuable, but yet who give freely of their time and effort in order that an authoritative encyclopedia of electrical definitions may be made available to all who wish to use it.

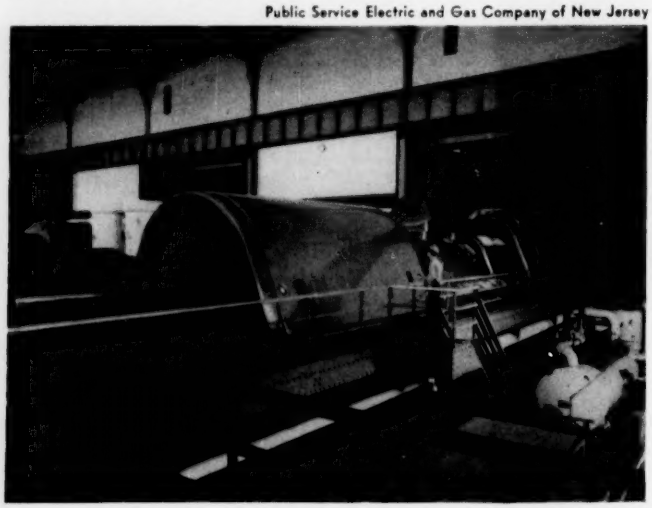
Credit for the work should also go to H. E. Farrer, formerly secretary of the AIEE Standards Committee and the C42 Committee, whose experience and advice has been most helpful; to J. J. Anderson, secretary of the AIEE Standards Committee and the ASA C42 Committee who carries the usual secretarial burdens, and to J. W. McNair, secretary of the Electrical Standards Committee, ASA, who has responsibility for general supervision and coordination of this work.



Edison Electric Institute

Above: Technical terms used in connection with transformers such as this 132,000-volt unit are all included in Group 10, "Machines, Transformers, and Mutators," in the international vocabulary. American Standard C42 gives "Transformers" a group to itself. Below: Post-war electrical developments are represented in this modern turbine generator at the Sewaren Generating Station of the Public Service Electric and Gas Company (N. J.), first station in the country to use steam at 1,050 F.

Public Service Electric and Gas Company of New Jersey



Status of Present Revision

With so many new terms hitherto not defined, no one questions the need and desirability as well as the importance of having these definitions made available at once. The chairman and secretary have employed every means available to them to expedite the work and bring out the definitions early in published form. However, the process of preparing the definitions is necessarily slow. There must be several meetings of most of the subcommittees whose members usually are widely separated, there must be coordination with the several AIEE and ASA committees on standards. Comparisons are made with the definitions in the Vocabulary of the International Electrotechnical Commission in the attempt, wherever possible, to make definitions of corresponding American and international terms alike. Also, there is a large amount of intracommittee correspondence, and it takes time even in a single subcommittee to reach agreement on many definitions whose scope or meanings have not as yet become clearly defined. Also, the work is being performed on a volun-

(*Continued on page* 156)

Unified Nuts and Bolts

American Standard presents dimensions and materials agreed on by Canada, Britain, and USA

by H. W. Robb
Chairman, Sectional Committee B18

PUBLICATION of a standard of unusual significance was announced early in April. The new American Standard, Square and Hexagon Head Bolts and Nuts, B18.2-1952, revision of a 1941 edition, offers improved requirements that will greatly benefit American industry; it also implements accord reached by U. S., British, and Canadian standards groups. Under the sponsorship of the American Society of Mechanical Engineers and the Society of Automotive Engineers, ASA Sectional Committee B18 prepared the revised American Standard and was responsible for formulating the American viewpoint in the A-B-C negotiations.

The new American Standard contains complete dimensional specifications, as well as recommendations on standard materials, for bolts and nuts. Previous editions covered only principal head proportions, leaving other details to trade practices or individual specification.

Needless variety is eliminated by consolidating types of bolts and nuts that have similar proportions, characteristics, and applications. As a result, new designs can make much greater use of fasteners that are completely interchangeable. This will permit greater economy in manufacture, increase availability of standard bolts and nuts, and tend to improve quality and service.

The standard covers bolts and nuts that are vital in military standardization of armament for mutual defense purposes of the principal North Atlantic Treaty countries. Successful conclusion of efforts on the part of British, Canadian, and American standards associations to unify their practices has been hailed by the British Standards Institution as "a most important development in agreement on armament production."

Already British Standards have been issued and much progress has been made in adoption of both the unified screw thread and bolt and nut standards in American practice.

"For the majority of American applications, little or no difficulty should be experienced in the use of the new standards in existing designs," the American Society of Mechanical Engineers declares in announcing publication of B18.2-1952. "It is desirable, however, to check applications involving close clearance of bolts and screws in sizes $\frac{5}{8}$ to $1\frac{1}{2}$ inches. It is also recommended that designers and purchasing agents become familiar with the dimensions and nomenclature that are used and recognize that time will be required in orderly transition of manufacture and stock."

Summary of Important Changes

With the exception of heavy bolts, head dimensions of all series of hexagon bolts and cap screws have been consolidated in American Standard B18.2-1952. This has been done by selecting as basic former across-flats dimensions of the automotive hexagon head bolts as cap screws for sizes up to and including 9/16 inch size and former across-flats dimensions of the regular hexagon bolts for bolts $\frac{5}{8}$ inch size and larger, and by predicating the head height on a radio of $\frac{5}{8}$ of the size diameter.

Light and regular series nuts have been consolidated by selection of the dimensional proportions of the light series for sizes up to and including $\frac{5}{8}$ inch and dimensional proportions of the regular series nuts for sizes above $\frac{5}{8}$ inch, with the exception of the $\frac{7}{16}$ inch size nut which is a modification of the light and regular series.

The term "Finished" hexagon bolt has been used to designate the consolidation of the automotive hexagon head bolt and the close body-toleranced regular semi-finished bolt. The term "Cap Screw" is also applicable in the range of sizes from $\frac{1}{4}$ to $1\frac{1}{2}$ inches for products having the same proportions and characteristics as the "Finished" bolts. The term "Finished" also is used to designate the consolidation of light and regular series of washer-faced as double chamfered nuts. In both instances, the term "Finished" refers to the quality of manufacture and closeness of tolerance but does not indicate that surfaces are necessarily machined.

A comparison of new and old dimensions of light and regular series bolts and nuts are shown in Table I on page 140.

How the New Bolt and Nut Standard was Developed

The task of reviewing, expanding, and modernizing the 1941 edition of American Standard B18.2 was assigned in 1947 to a subcommittee of specialists under the direction of the late C. F. Newpher of the National Screw & Manufacturing Company. Phases of the study were assigned to subgroups under the chairmanship of outstanding authorities, such as G. S. Case, Chairman of the Board, Lamson & Sessions Company; F. G. Kaufman, Vice-President and General Manager of the Cleveland Cap Screw Company; W. L. Barth, Executive Secretary, Engineering Standards, General Motors; and J. S. Davey, Assistant to the President, Russell Burdsall & Ward Bolt & Nut Company.

Much credit is likewise due to standards committees and groups of manufacturing and using industries for contributing data and experience from their various viewpoints.

Table I

Across-Flats Dimension (Wrench opening)

Size	Old Standards				New Standards	
	Cap Screw Auto. Bolt	Regular Bolt	Light Nut	Regular Nut	Bolt	Nut
1/4	7/16	~~3/8~~	7/16	7/16	7/16	7/16
5/16	1/2	1/2	1/2	~~9/16~~	1/2	1/2
3/8	9/16	9/16	9/16	~~5/8~~	9/16	9/16
7/16	5/8	5/8	~~5/8~~	~~3/4~~	5/8	11/16
1/2	3/4	3/4	3/4	~~13/16~~	3/4	3/4
5/8	~~7/8~~	15/16	15/16	~~1~~	15/16	15/16
3/4	~~1~~	1 1/8	~~1 1/16~~	1 1/8	1 1/8	1 1/8
7/8	~~1 1/16~~	1 5/16	~~1 1/8~~	1 5/16	1 5/16	1 5/16
1	~~1 5/16~~	1 1/2	~~1 7/16~~	1 1/2	1 1/2	1 1/2
Larger Sizes					Same as Regular Series	

Height of Head or Thickness
New Bolts—Approximately same as Regular bolt.
New Nuts—Same as Light nut in 1/4 - 5/8 sizes;
Same as Regular nut in larger sizes.

After an appreciable amount of review of the past standards and the requirements of American industry, tentative proposals were drafted by the subcommittee for consideration. The course of future events, however, was affected by inquiries from the British Standards Institution in the Fall of 1949 proposing collaboration in the establishment of unified standards for bolts and screws.

New York Conference

After an exchange of preliminary comments, a conference was arranged in New York, June 1-2, 1950, at which delegates of the three countries explored the desirability and practicability of similar standards for industrial purposes and the necessity for mutual defense. The United Kingdom delegation was headed by Sir Anthony Bowlby of the British Bolt, Nut, Screw, and Rivet Conference; the Canadian delegation by Colonel M. P. Jolley of Canadian Screw and Gear, Ltd., and by J. G. Morrow of the Canadian Standards Association; and the American delegation by the chairman of ASA Sectional Committee B18 who also acted as Conference chairman.

The principal purpose of the Conference was to seek, if possible, proportions of hexagon bolts and nuts which could use the same size wrenches in the three countries. The British delegation greatly simplified the problem by proposing selection of proportions from existing American Standards, but nevertheless this involved unification of somewhat dissimilar products and practices that had developed over the years in various branches of American industry.

After arriving at accord in this Conference, it then became necessary to study possible effects in various applications, to consolidate requirements, to analyze and adjust relative proportions of successive sizes, and to modify the draft of the proposed American Standard. In making this study, the desirability of a change in two of the dimensions selected by the Conference became apparent, and suggestions and justification were submitted to the United Kingdom delegation, after which the draft was submitted to industry for review

In the meantime, similar progress had been made in Britain where substantial agreement had been reached on acceptance of radical changes in British standards in an effort to secure unification with American ideas and practices. It also appeared practicable to them to extend the unification beyond across-flats dimensions to include the other dimensions in the new draft of the American Standard to assure complete interchangeability of products of the three countries. An invitation was therefore extended to the American and Canadian standards bodies and to government agencies to attend a conference in London April 26-27, 1951 to consider this possibility and to explain more fully to British industry the practices that had developed in the United States as reflected by the American Standard. The American delegation was composed of:

USA Delegates—R. G. Cummings, Ford Motor Co.; I. H. Fullmer, National Bureau of Standards; G. L. Harvey, Lamson & Sessions Co.; H. W. Robb, General Electric Co.; D. H. Samuelson, National Screw & Mfg. Co.; D. M. Shackelford, American Society of Mechanical Engineers; W. C. Stewart, Industrial Fasteners Institute.

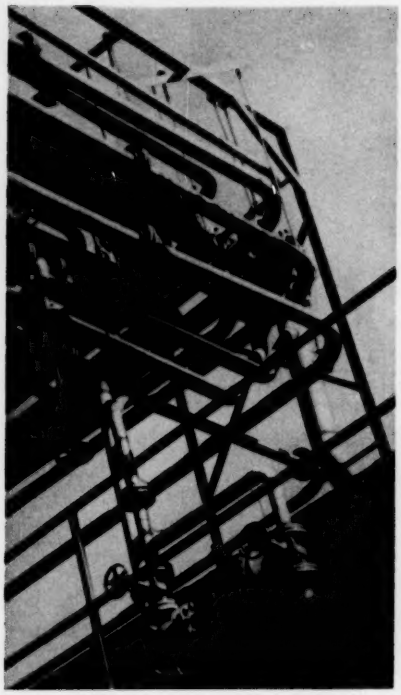
USA Services—E. J. Almquist, Army; R. F. Bosron, Air Force; H. B. Bothwell, Navy; Lieutenant Colonel D. L. Hine, Army; J. W. Jenkins, Navy; Lieutenant Colonel J. B. Carvey, Army; Colonel W. L. Coughlin, U. S. Army Standardization representative in UK; Lieutenant Colonel I. H. Hare, Air Force.

These delegates met with representatives of British and Canadian industry and military services.

Much of the conference discussion was concerned with the proportions of the 7/16 in. size hexagon bolt which has had such extensive and critical use in the automotive industry that it was impractical to modify its proportions as originally desired by the British. Complete accord was reached on every point, and the willingness of the British to understand and to cooperate was abundantly demonstrated by the fact that all of the important motions to accept American practices were made by members of the United Kingdom delegation.

It might be mentioned in passing that the British accepted American proportions for pan head, 80 deg. and 100 deg. countersunk head, oval head, and fillister head machine screws, as well as American Standards on self-tapping screws, although these items were not the purpose of

(Continued on page 158)



Tennessee Eastman Co

Stainless 5S Pipe Added to B36.19

by J. D. Mattimore

Mr Mattimore, chief engineer of Tube Turns, Inc, represents the American Society of Mechanical Engineers on the Chemical Industry Correlating Committee. He is chairman of the CICC Subcommittee on Stainless Steel and Corrosion Resisting Pipe and Fittings. Sectional Committee B36 which is responsible for preparation of standards on wrought iron and wrought steel pipe and tubing under ASA procedures is sponsored by the American Society of Mechanical Engineers and the American Society for Testing Materials.

A REVISED edition of American Standard B36.19, Stainless Steel Pipe, the revision consisting of the addition of dimensions for Schedule 5S pipe, is now available. This is welcome news to those users who, for reasons of procurement of critical stainless steel, as well as for economy, have had need for such a light weight pipe standard. It also is particularly worthy of note because it represents the first tangible accomplishment of the ASA Chemical Industry Correlating Committee which was organized almost exactly two years ago, in May 1950. In addition, while it would not be entirely correct to say that the need for the Schedule 5S standard caused the creation of CICC, it is certainly true that that need, and an informal meeting held in September 1948 to discuss it, began the process.

To fully understand the importance of including Schedule 5S in B36.19 it is necessary to know that the original edition of the standard in 1949 covered three schedules of pipe thickness for sizes ⅛ in. through 12 in., designated respectively Schedule 10S, 40S, and 80S in order of increasing thickness. Schedules 40S and 80S, respectively, have the same thickness as standard wall and extra strong wall wrought steel pipe covered by American Standard B36.10-1930 (now B36.10-1950). Schedule 10S pipe, however, represented the first new schedule of thickness to be standardized in over 15 years; it is approximately one-half the weight of Schedule 40S or standard wall pipe and consequently is thought of as lightweight pipe.

Schedule 5S, listed in the revised edition of American Standard B36.19-1949, is approximately one-third lighter in weight than Schedule 10S and is therefore roughly a third the weight of Schedule 40S. This saving in weight of critical materials in a time of national emergency is, of course, extremely important. In addition, for those whose service conditions permit the use of Schedule 5S pipe, it offers a substantial saving in cost over that of Schedule 10S.

The major credit for recognizing the need for a standard covering stainless steel pipe must go to the Heating, Piping and Air Conditioning Contractors National Association. Hardly had hostilities ceased in 1945 when the lack of such a standard caused the members of that organization considerable embarrassment and no small expense in trying to assemble stainless steel piping systems from components for which no standards existed. Under the sponsorship of their Standards and Research Committees, a meeting was held in Pittsburgh attended by representatives of the technical committee on pipe and tubing of the American Iron and Steel Institute, manufacturers of pipe and of welding fittings, as well as by piping contractors themselves. The result was tentative agreement on dimensions for Schedules 10S, 40S, and 80S, which were forwarded to ASA with the request that they be considered as the basis of a new American Standard. As a consequence, ASA Sectional Committee B36 created its Subcommittee No. 2 on Stainless Steel Pipe under the chairmanship of J.J.B.

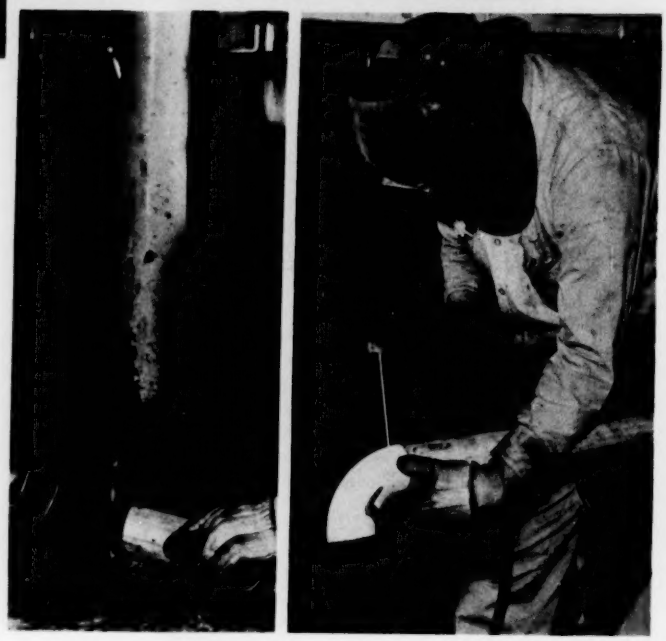
One step in manufacture of a seamless stainless steel tube. Steel billet enters the rolls here; a hole is pierced through it longitudinally; it is then rolled to desired diameter and wall thickness. Close temperature regulation and strict metallurgical control are required.

Photo (right) courtesy of The Babcock & Wilcox Company — Tubular Products Division

Rutherford of The Babcock & Wilcox Company, Tubular Products Division. Under the jurisdiction of this subcommittee the actual work of creating American Standard B36.19 has been carried out.

Before the work on the initial publication of B36.19 in August 1949 had reached fruition, the needs of the chemical industry for still lighter weight stainless steel pipe became pressing. An informal conference of chemical industry representatives and producers of stainless steel welding fittings was held in New York in September of 1948 to determine how that need could best be filled. The decision reached was that a schedule of pipe, tentatively designated Schedule 5S, having a wall thickness about one-third lighter than Schedule 10S pipe, would be the best solution. The degree to which the wall thickness could be lightened was determined by consideration of practical difficulties of field welding the smaller sizes (which would have the thinnest walls), and resistance to collapse under vacuum of the larger sizes.

A very happy but unforeseen outcome of the September 1948 meeting was recognition by the chemical industry representatives present of the desirability of having their requirements adequately considered in the formulation of American Standards governing equipment extensively used by their industry, and as a result of the creation of the first ASA Chemical Industry Correlating Committee early in 1950. One of the first projects considered by CICC was development of standardized dimensions for stainless steel pipe lighter than Schedule 10S. In December of that year the CICC called a meeting of all interested consumers and producers to determine whether the schedule of thicknesses proposed for Schedule 5S in 1948 would still meet the majority of industry's requirements. The great preponderance of opinion was in favor of standardizing on those thicknesses. CICC therefore sent a formal recommendation to ASA Sectional Committee B36 that they be added to B36.19. The present revision of B36.19 is the result of that recommendation.



Tennessee Eastman Company

Above (left)—Cutting Schedule 5S stainless steel pipe to length needed; (right) welding Schedule 5S pipe requires special attention to procedures called for in applicable codes and specifications.

First Specifications for Power Transformers

by E. V. de Blieux

General Electric Company; Deputy Chairman
ASA C57.12, Subcommittee for Power and Distribution Transformers

AMERICAN STANDARDS specifying mechanical features and accessories as well as electrical features of pole-type distribution transformers have been in existence for a good many years. These standards have attained almost universal acceptance because they are the means to a realization of important benefits. Among these benefits are lower cost in comparison with nonstandard transformers, simplified specifications, less inventory because of fewer varieties and shorter or stock shipment, consistently higher quality transformers, and reduced installation and maintenance costs.

These user benefits can now be realized in the lower kva range of power transformers by wide use of the proposed standard for power transformers C57.12a, just published for a period of trial use. This new standard specifies mechanical and electrical features of 60-cycle, two-winding, mineral oil-filled transformers rated 501 to 5000 kva inclusive, single phase; 501 to 10,000 kva inclusive, three phase; high voltage 2400 to 67,000 volts inclusive; low voltage 480 to 14,400 volts inclusive; generally for step down purposes.

This particular range of transformers was chosen for standardization because it represents the area of greatest numerical volume, of less complication than higher voltages or kva's, and, therefore, the area where the advantages of standardization would be greatest.

The new standard consists of two parts. Part I specifies standard electrical characteristics and mechanical features that are either generally recognized as essential or are required by practically all purchasers of transformers of the ratings covered by the new standard. This part covers such features as kva and voltage ratings, taps, impedances, and principal accessories. Part II specifies other characteristics and features that are required for some applications. The second part of the standard covers such features as forced-air cooling, winding temperature indicators, terminal boards, junction boxes for cable entrance, and similar items that are required only for certain applications or that have not generally been a component of transformers of these ratings currently being manufactured.

Table 1 [Figure I of this article], from Part I of the new standards, lists the standard kva ratings. It is simple and relatively brief but it is the result of hundreds of hours of work that extended over several years.

To make certain that the kva's listed in Table I represent the desires of the majority of the users of transformers covered by this standard, questionnaires were sent on three occasions to a large and diversified group of correspondent advisers to obtain their comments and suggestions. The correspondent advisers are individuals who have been designated by their company, agency, or firm to reply to questionnaires sent them by the subcommittee. There are 158 advisers representing 110 power companies, 17 government and municipal agencies, 13 consulting and 18 industrial firms, that are large users of transformers. Between 65 percent and 75 percent of the advisers replied to each questionnaire and, in most cases, there was a high degree of unanimity in the replies. In addition, the manufacturers made an analysis of transformers furnished customers over a nearly four-year period from January 1946 through October 1949. Similar diligence was exercised by the subcommittee in connection with other important items of the standard.

Figure I

Table 1—Kva Ratings (2.11)

Single Phase Kva	Three Phase Kva
833	750
1,250	1,000
1,667	1,500
2,500	2,500
3,333	3,750
5,000	5,000
	7,500
	10,000

The committee recognizes the desirability of specifying a single standard for each item; nevertheless, unless there was preponderant preference in each case for one item, the preferred alternatives are specified. This is why both bolted and welded main covers are standard. Also, sealed tank and gas-oil-seal oil preservation systems are both standard.

Another item in Part I of the new standard that is a distinct improvement over the present C57 general standard for transformers is the specification regarding impedance.

The following is quoted from the new standard.

"*2.2 Impedance.* 2.21 The percent of impedance voltage at the self-cooled rating as measured on rated voltage connection shall be in accordance with Table 7 [Figure II]. Tolerance shall be as specified in American Standards C57.10, 11, 12, 31, and 32-1948, and C57.12-1949. The percent departure of tested impedance on any tap from tested impedance at rated voltage shall not be greater than the total tap voltage range expressed as a percentage of the rated voltage.

"If the tested impedance on any tap varies from the tested impedance at rated voltage by more than 2½ percent of the tested impedance at rated voltage, the impedance values outside this limit shall decrease on taps above rated voltage and increase on taps below rated voltage."

The present general standards for transformers[1] make no mention of im-

[1] American Standard General Requirements for Transformers, Regulators, and Reactors, C57.11-1948, and Distribution, Power, and Regulating Transformers, and Reactors Other than Current-Limiting Reactors, C57.12-1949.

Figure II

Table 7—Impedance (2.21)

High-Voltage Rating, Volts	Percent Impedance	
	Low Voltage, 480, 600 Volts	Low Voltage, Above 600 Volts
2,400-22,900	5.75	5.5
26,400, 34,400	6.25	6.0
43,800	6.75	6.5
67,000	—	7.0

Note: Voltages separated by a hyphen indicate that all intervening standard voltages are included. Voltages separated by a comma indicate that only those listed are included.

pedance on the tap connections. As a result, the impedance on the tap connections of various designs, even for the same kva and voltage ratings, may be radically different. The new standard quoted above specifies that if the percent impedance on any tap connection is outside of a narrow band, centered on the impedance for the rated connection, the impedance shall change only in the specified manner.

The object of this specification is to enable the user of transformers that are in accordance with this standard to obtain reasonably good parallel operation between standard transformers of different manufacture but of the same rating without the transformers being specifically designed for parallel operation.

It should be noted that in accordance with the recommendation of the EEI-NEMA report "Preferred Voltage Ratings for A-C Systems and Equipment," the new standard specifies the middle tap connection as the rated connection.

The criterion used to determine which items should be included in Part II of the new standard was to weigh the difficulty of providing the feature against the frequency with which purchasers of transformers specified the feature. Accordingly, such items as hardwood skids, packing for sea shipment, and similar items that are merely attachments and can be provided without modification of the basic standard transformer are included in Part II even though it is recognized that purchasers will seldom specify these items. Contrasted with these items, provision for connection to cables for example, requires major modification of the basic standard. Items that involve major modification of the basic standard transformer were included in Part II only after questionnaires and surveys had confirmed that there is a large demand.

One of the principal items in Part II is the provision for rated primary voltages that differ from the single rated primary voltage (for each insulation voltage class) that is specified in Part I. Part II of the new standard provides for standard transformers being supplied with any rated primary voltage that is within the "Range of other high ratings (line to line)" listed in the right-hand column of Table 9 of Part II [Figure III of this article]. For example, Part I of the standard specifies 22,900 as the rated primary voltage for the 25-kv insulation class. Referring to Table 9 which is taken from Part II of the new standard, the purchaser, if he wishes, may specify a standard transformer with any rated primary voltage from 16,400 to 24,600 inclusive. The transformer will be furnished with the specified primary voltage and with two taps above and two taps below corresponding to the taps which would have been provided if a standard transformer with 22,900-volt primary had been specified. This item, as well as the specification for wye-connected primary windings in three-phase transformers, for series multiple low voltage windings and for some other features included in Part II provides considerable flexibility.

This new standard is the result of more than four years of intensive work by Power and Distribution Transformer Subcommittee C57.12 of ASA Sectional Committee on Transformers, Regulators, and Reactors C57. The membership of the subcommittee includes representatives of nine major operating companies and of six major transformer manufacturers.

The subcommittee believes that the new standard is practical, comprehensive, and in accordance with the desires of most purchasers and manufacturers of transformers of the type covered by this standard. It is being published for a period of trial. General use will make it possible for

(*Continued on page* 157)

Figure III

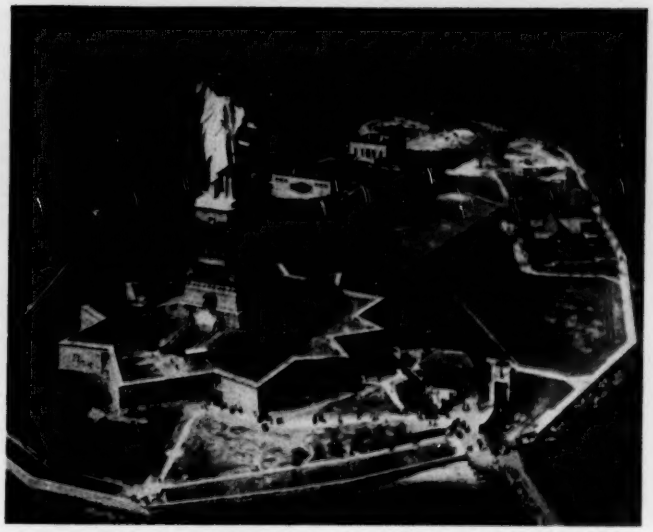
Table 9—Range of Other High-Voltage Ratings (4.21)

Insulation Voltage Class, Kv	Basic Impulse Insulation Level, Kv	Standard High-Voltage Rating, Volts		Range of Other High-Voltage Ratings (Line-to-Line), Volts
		1 Phase	3 Phase	
8.66	95	4,800/8,320Y	6,900, 7,200	6,600-8,750
15.0	110	6,900/11,950Y 7,200/12,470Y 7,620/13,200Y 12,000, 13,200 13,800	12,000 13,200 13,800	11,000-14,750
25.0	150	22,900	22,900	16,400-24,600
34.5	200	26,400, 34,400	26,400, 34,400	26,400-36,200
46.0	250	43,800	43,800	37,800-46,000
69.0	350	67,000	67,000	56,700-69,000

Note 1: All voltages are △ unless otherwise indicated (see 4.22).
Note 2: Voltages separated by a hyphen indicate that all intervening voltages are included. Voltages separated by a comma indicate that only those listed are included.

Work and Play for ISO Visitors

June 9-26



Courtesy of Standard Oil Co (N. J.)

The Statute of Liberty, on Bedloe's Island, greets visitors from other countries

MANY companies and organizations are cooperating to make the visit of delegates to meetings of the International Organization for Standardization enjoyable and worthwhile. Over 100 companies, trade associations, and technical societies have subscribed to a special fund to cover expenses of the ISO triennial. Other groups are making their facilities available.

The United States Government is represented by The Honorable Willard L. Thorp, Under Secretary of State for Economic Affairs. Mr Thorp and Albert Caquot, noted French engineer and industrialist, will be the speakers at a banquet June 19 at the Waldorf-Astoria, preceding the opening of the ISO General Assembly. Mr. Caquot is president of the International Organization for Standardization as well as of AFNOR, the French National Standards body. Roger E. Gay, president of the Bristol Brass Corporation, and president of the American Standards Association, will preside.

During their stay in New York, delegates and their families will have an opportunity to become acquainted with many of the sights and activities that make New York famous throughout the world.

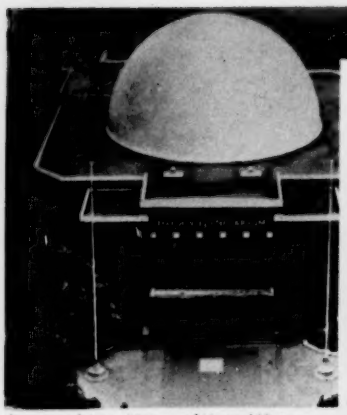
Technical and industrial representatives will be particularly interested in tours of industrial and business organizations in the New York district. A visit to the General Motors Company at Linden, New Jersey, will give visitors a picture of a typical automobile assembly line similar to those in operation in Detroit. At this plant, Buick, Oldsmobile, and Pontiac cars are assembled for distribution to Eastern purchasers. An incidental attraction of this tour will be a trip over the George Washington Bridge and the recently completed New Jersey Turnpike, one of the most up-to-date highways in the country.

A visit to the Fanny Farmer Candy Plant will give a picture of women at work in production techniques applied to food manufacture.

Since New York is famous for its shopping facilities, an especially conducted tour of Macy's, largest department store in the world, has been arranged. New York's clothing industry will be represented by a visit to Henry Rosenfeld, Inc, where the

ISO Technical Committee Meetings

Subject	ISO No.	Secretariat	Date
			June
Ball and Roller Bearings	ISO/TC 4	Sweden	16-19
Radial Bearings	ISO/TC 4/SC1	Switzerland	23-24
Taper Roller Bearings	ISO/TC 4/SC2	USA	25-26
Cast Iron and Cast Steel	ISO/TC 25	United Kingdom	9-11
Cinematography	ISO/TC 36	USA	9-10
Iron and Steel	ISO/TC 17	United Kingdom	9-12
Lac (with ASTM meetings)	ISO/TC 50	India	23-25
Limits and Fits	ISO/TC 3/SC1	France	16-19
Machine Tools	ISO/TC 39	France	11-13
Marks Indicating Conformity with Standards	ISO/TC 73	France	14
Mica	ISO/TC 56	India	9-11
Petroleum Products	ISO/TC 28	USA	12-14
Preferred Numbers	ISO/TC 19	France	9-10
Screw Threads	ISO/TC 1	Sweden	11-14
Textiles			
Yarn Testing	ISO/TC 38/SC5	USA	13-16
Shrinkage of Fabrics in Washing	ISO/TC 38/SC2	USA	13-16



Courtesy of Amer Museum of Natural History

Photo courtesy of Standard Oil Co of New Jersey

(Above) Hayden Planetarium's show will feature the sun's effect on weather; (Right) New United Nations secretariat building in New York

assembly-line technique is applied in production of high-styled, medium-priced dresses. There will be at Saks-Fifth Avenue an opportunity to see fashions of special interest to women in the party.

An opportunity will be offered to tour the plant of the *New York Times*, one of the best known and most widely read newspapers in the world.

A comprehensive view of New York itself will be provided in a sightseeing tour by bus, as well as by a special sightseeing trip of the Port of New York on tugs of the Moran Towing and Transportation Company.

Radio broadcasting facilities will be on display in a tour of Radio City. A sample of New York's cultural facilities will be seen on especially conducted visits to the Hayden Planetarium, the Metropolitan Museum, and the Frick Museum.

No visit to New York would be complete without a trip to the Empire State Building Observatory, or to a baseball game. Those delegates who are interested in this most American of games will have the privilege of attending a "doubleheader" between the New York Giants and the St Louis Cardinals at the Polo Grounds.

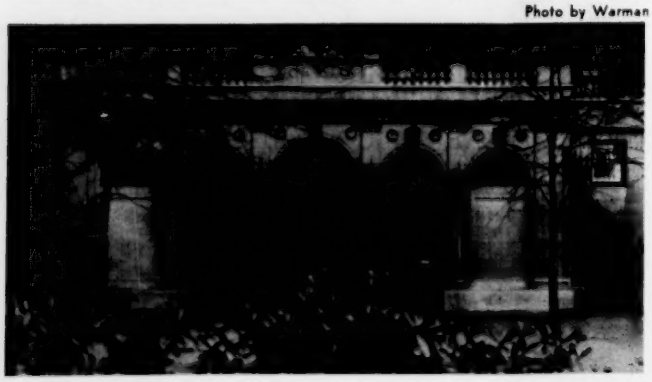
One of the tours expected to be of special interest to delegates and their families will be a conducted tour of the United Nations headquarters.

In addition to the city itself, ISO guests will have an opportunity to see the lower part of the beautiful Hudson River valley and Highlands. An all-day bus trip to Hyde Park and West Point will take the guests up the east bank of the Hudson River through the historic towns of Irvington, Tarrytown, the Sleepy Hollow Country, Peekskill, and Poughkeepsie. After a visit to the home of the late President Franklin Roosevelt, the party will continue the trip over the Storm King Highway, with its fine view of the Highlands, to West Point. There those interested will have an opportunity to inspect the grounds and buildings.

Living quarters, as well as committee meeting rooms and general headquarters, are being provided at Columbia University.

Below: John Jay Hall, Columbia University, where many ISO delegates will live

Photo by Warman



What's New on American Standard Projects

Cast Iron Pipe and Fittings, A21—

Sponsors: American Gas Association; American Society for Testing Materials; American Water Works Association; New England Water Works Association.

The long campaign by Sectional Committee A21 to develop standards for cast-iron pipes and fittings for the gas and water works industries (and incidentally for transportation of other fluids) is now reaching the point where submittal of several standards may be expected. One has already been submitted, Specifications for Short-Body Cast-Iron Fittings, 3 In. to 12 In., for 250-Psi Water Pressure Plus Water Hammer, A21.10. It is expected that three other proposed standards, concerned with pipe for the gas industry, will be submitted shortly. Six others are in course of preparation, some of which may be submitted before the year is over.

Installation of Gypsum Wallboard, A97—

Sponsors: American Institute of Architects; Gypsum Association.

The organization meeting of Committee A97 was held in the Board Room of the American Institute of Architects in Washington on April 8. Theodore Irving Coe and O. H. Storey, Jr. representing the American Institute of Architects and the Gypsum Association, sponsors, were elected as chairman and secretary. A draft for a proposed standard on interior gypsum wallboard construction, prepared by the Gypsum Association, was considered and an editing committee to prepare a new draft was appointed.

Bolts, Nuts, Rivets, Screws, and Similar Fastenings, B18—

Sponsors: The American Society of Mechanical Engineers; Society of Automotive Engineers

A proposed American Standard on Small Solid Rivets is being distributed by the American Society of Mechanical Engineers, as sponsor. Organizations interested are invited to review the proposal and send their comments to D. M. Shackelford, Standards Administrator, ASME, 29 West 39th Street, New York 18. Copies can be obtained by writing Mrs Shackelford.

The tentative standard gives tables of proportions and dimensions for small solid rivets designated as flat head, countersunk head, button head, pan head, truss head, tinners', coopers' and belt rivets. All other types of small solid rivets within the limits of diameters given are to be considered special.

The proposal was prepared by a subcommittee of Sectional Committee B18, of which W. N. Boyd, Oliver Iron & Steel Corporation, Pittsburgh, served as chairman.

Ball and Roller Bearings, B3—

Sponsor: ASA Mechanical Standards Committee

Several recent meetings of Subcommittee 6 on Balls Used in Anti-Friction Bearings, have resulted in a recommendation for a proposed American Standard for chrome steel and stainless steel balls. The subcommittee's proposal has been forwarded to the sectional committee. F. W. Recknagel, Federal Bearings Company, Incorporated, is chairman.

Small Tools and Machine Tool Elements, B5—

Sponsors: American Society of Mechanical Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers

Chucks and Chuck Jaws—Specifications for chucks for the Type L spindle nose have been included in a proposed revision of the American Standard on Chucks and Chuck Jaws, B5.8-1936. The tentative revision is now being circulated to interested groups for review and comment. Since the chucks covered are for use on engine lathes, tool room lathes, turret lathes, and automatic lathes and fit spindle noses covered by American Standard B5.9-1948, the proposed revision brings the 1936 standard on chucks up-to-date and into line as a suitable companion document for the American Standard for spindle noses. The chucks covered in the revision are made in four classes for four different types of duty. The master jaws of each class of chuck are of such dimensions that top jaws will be interchangeable on all chucks of the same diameter of a particular class.

Review copies of the Proposed Revision, American Standard on Chucks and Chuck Jaws, can be obtained by writing D. M. Shackelford, Standards Administrator, American Society of Mechanical Engineers, 29 West 39th Street, New York 18, N. Y.

Involute Splines—Word has come from Sweden that a tentative Swedish Standard, SMS 716, on involute splines is based on the American Standard, Involute Splines, Side Bearing, B5.15-1950.

Safety Code Correlating Committee—

Myron Park Davis, Yonkers, N.Y., has been re-elected chairman of SCCC for 1952, with William P. Yant, Mines Safety Appliances Company, Pittsburgh, Pennsylvania, serving as vice-chairman. SCCC Executive Committee is: John A. Dickinson, National Bureau of Standards, Washington, D.C.; A. S. Kelly, Industrial Safety Standards, National Safety Council, Chicago, Illinois; E. P. Knight, The Employers' Group, Boston, Massachusetts; Oscar Lehman, Chrysler Corporation, Detroit, Michigan; R. C. Sogge, General Electric Company, Schenectady, N. Y.

Electric Lamps, C78—

Sponsor: Electrical Standards Committee

Subcommittee 2 on Electric Discharge Lamps has outlined its work program for the coming year as follows:

(*a*) Review of present fluorescent lamp standards with a view toward establishment of electrical characteristics more closely in line with laboratory test results obtained by various lamp manufacturers.

(*b*) Consider question of standardization of new set of cold-cathode lamps.

(*c*) Consideration of specifications to be presented by a Preparatory Committee for ballasts and lamps to

give 40 watts, other lamp sizes to be considered later.

(*d*) Mercury Lamps. A table prepared by the IES Light Sources Committee provides the physical and electrical characteristics for "Typical Mercury Vapor Lamps Used In General Lighting."

International Electrotechnical Commission—

The U.S. National Committee is being asked to vote on a number of proposals for approval as international recommendations. These are: fuses for voltages not exceeding 1,000 volts for ac and dc; four proposed international recommendations on dimensions and gauges for lamp caps and holders; and basic climatic and mechanical robustness testing, procedure for components, for electronic devices.

Letter Symbols, Y10—

Sponsor: American Society of Mechanical Engineers

Depreciation — A proposed system of letter symbols for the mathematics of depreciation has been forwarded to the sponsor for consideration by Sectional Committee Y10. The proposal is in the form of a report prepared by a special subcommittee appointed for the purpose by the Committee on Depreciation of the National Association of Railroad and Utilities Commissioners. Representatives of the American Gas Association, Edison Electric Institute, and American Telephone and Telegraph Company participated.

"It is believed that the attached report has filled a long felt want," declares H. J. Flagg, of the New Jersey Board of Public Utility Commissioners, who served as chairman of the Subcommittee that prepared the report. "By the use of the symbols therein presented, mathematicians who deal with the subject of depreciation talk the same language and thereby are readily understood by each other. Previous to this report each mathematician devised his own system of symbols of which only a few might have general recognition." Mr Flagg forwarded the report to the American Standards Association with the request that it be considered for approval as American Standard. He took this action after the report had been in circulation for three years with no suggestions for changes from the mathematicians concerned.

Lubrication—The pattern already set in approved American Standards has been generally followed in preparing symbols for lubrication, declares John Boyd, member of the Educational Committee of the American Society of Lubrication Engineers. Mr Boyd's statement was made in a report explaining the tentative list of symbols adopted by the committee for use in a series of monographs being prepared by the committee on the subject of lubrication. When the committee undertook the preparation of this series, it found there was little uniformity in the use of mathematical symbols and in the meaning of terms found in the literature. Therefore, it undertook a study of the problem and decided that standard symbols and definitions should be established. A glossary of lubrication terms is now being prepared. The committee's tentative list of letter symbols was published in *Lubrication Engineering*, December 1951. This list will be used in the monographs now being prepared.

Every effort was made to select symbols that would conform to symbols used in American Standards in other fields. However, in a number of cases, this was impossible, Mr Boyd explains. The hardest term to fit into the already accepted American Standards was that for power, he says. American Standards on letter symbols all use "P" for power. However, special usage in lubrication has identified "P" with the load per unit of projected area. "H" was chosen, therefore, because although not in agreement with American Standard practice it does agree with the usage in many books and lubrication articles. As an alternate, to provide a symbol more in keeping with the American Standard practice, the letter "P" with a subscript "r" has been added.

The committee hopes that its proposed symbols will be accepted by the American Society of Lubrication Engineers and that eventually it may become an approved American Standard for lubrication.

Technical advances in the production and use of iron and steel during the last decade of the Nineteenth Century are given credit for spurring organization of the British Standards Institution—the first national standards association. *(Fifty Years of British Standards, BSI,* **London, 1951.)**

Drawing and Drafting Practice, Y14—

Sponsors: American Society of Mechanical Engineers; American Society of Engineering Education

In addition to Section 4 on pictorial presentation, two other sections of the Proposed American Standard now known as the Drafting Standards Manual are out for industry comment. The period for comment on Section 4 closed March 7. Section 2 on line conventions, lettering, and sectioning, and Section 11 on plastics, however, are now being circulated. Any group that would like to review these sections and offer comments is invited to do so. Requests for copies should be directed to the American Society of Mechanical Engineers, 29 West 39th Street, New York 18, N. Y.

Drafts of a number of other sections have been reviewed by the editing subcommittee and referred back to the subcommittee in charge for consideration of the suggested changes. These are Section 3 on projections; Section 8 on castings; Section 10 on metal stampings; and Section 13 on springs, helical and flat.

At its meeting March 25 at the Ohio State University, the subcommittee on dimensioning and notes reported that it has reviewed a proposed British Standard dealing with dimensioning and tolerances and has offered its analysis on the points of difference between American and British practice.

Quality Control, Z1—

A recent report on the use of American War Standards on statistical methods of quality control shows that 37,000 copies of the Control Chart Method of Controlling Quality During Production, Z1.3-1942, have been sold.

Standards From Other Countries

MEMBERS of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received.

For the convenience of our readers, the standards are listed under their general UDC classifications.

621.3 Electrical Engineering

DENMARK	DS
Transformer sub-station (tower). Dimensions	770.1
Transformer sub-station (tower). Specimen layout of electrical equipment	770.2, 785
Overhead power line equipment (poles, insulators, insulator pins, braces, etc	771-784
GERMANY	**DIN**
Rules for the treatment of the surface of ceramic materials	40686
Paper double capacitors 160 v and 350 v, class 3	41154
Paper capacitors with additional resistor, 160 v to 500 v, class 3	41176
Paper capacitors, 125 v to 1 kv, class 1	41161
Plastic capacitors 63 v and 250 v, class 1	41384
Brushes for commutators and collector-rings	42900, B1.1
Specifications for hot-pressed brass parts for electrical installation	43134
Electric heating elements	44921-44924
Cable terminal lugs	46208
Stuffing-boxes	46255
Different grades of paper for insulation of cables	47110
Pattern for roughening surfaces of insulating ceramic parts	48108
Round outlet boxes	49072
Adjustable power transformers	42515
Oil transformers, 3 phase 50c, up to 1250 kva and 20 kv	42503
Sleeve type connector for bare conductor cables	48217
Porcelain inside wall bushings	48105, B1.1,3,4
Straight insulator pins	48044
Binding clips	46282
Arrows indicating direction of movement of switch—and similar apparatus control handles	43602
Outdoor insulator, Type RMK	48140
Cross-wound coils	41283
Brushes for electric machines. Tolerances, fits. Size of copper cable	42900, B1.2,3
Insulators for overhead lines, types VHD, K and L	48004, 48007, 48012
Binding posts, ordinary	41000
Transportation rollers for heavy switchgear	43600
Countersunk cylinder head screw for contacts	46007
Contact heads for switches	43603
Railroad-type electric bulbs	49818
Hot plates, electric	44911
Paper capacitors, 160-500 v, 1x30x30, class 1	41141
Paper capacitors, 160-700 v, 1x45x50, class 1	41143
Paper capacitors, 160-500 v, 1x30x30, class 3	41151
Paper capacitors, 160-500 v, 1x45x50, class 3	41153
Telecommunication. Round relay. Contact and connection diagram	41221, B1.2
3-pole jack	41700
GREAT BRITAIN	**BS**
Vitreous-enamelled steel reflectors for use with tungsten filament lamps	232:1952
Cooker control units for use in 2-wire circuits of not more than 250 volts declared voltage	438:1952
Schedule for electric discharge lamps for general purposes	1270:1952
Electricity meters	37:parts 1 & 2:1952
Enamel (oleo-resinous) and cotton-covered round copper wire	1815:1952
Dimensions of conduit dies	1813:1951
INDIA	**IS**
Porcelain insulators for telegraph and telephone lines	283
ISRAEL	**SI**
Transformers with separate winding and output voltage up to 50 volts	40:1951
MEXICO	**DGN**
Steel conduits and fittings for electric wiring	J 16-1951
NETHERLANDS	**N**
Electric fences. Nomenclature of parts	971
Telecommunication. Radiolocation. Terminology	1071
Electro-acoustics. General principles	1077
Telecommunication. Preferred sizes of resistors and capacitors	1393
Steel conduits for electric wiring, non-screwed type	1251
POLAND	**PN**
Telecommunication capacitors, plain	T-80000
Twenty-eight standards for various fittings for oil transformers such as unions, oil-gage glass tube, thermometer housing, etc	E-81404 thru 81431
Lightning arrestor for subscriber's telephone installation	T-82002
Telephone jacks and plugs, 5.5 mm and 6.5 mm single and multiple	T-82100-82104
Telephone signal lamp cover	T-82106
Strips for identification of telephone jacks	T-82109
Fuse holders, telecommunication	T-82116
Insulating tube	T-82119
Telecommunication. Single spring plug and details	T-82120-82123
Notched sleeve joints	
For bare copper conductors of overhead lines	E-92300
For bare aluminum conductors of overhead line	E-92302
For bare steel aluminum conductors of overhead lines	E-92304
Notched joining sleeves for individual wires in telecommunication cables	T-92313

621.753 Tolerances, Fits, Gages

DENMARK	DS
ISA—Tolerance System:	
General basic rules	801
Holes grouped according to class	802
Shafts grouped according to class	803
Holes grouped according to grade	804
Shafts grouped according to grade	805
Recommended fits, basic hole system	806
Recommended fits, basic shaft system	807
GERMANY	**DIN**
Go-gages for holes from 100 to 500-mm in diameter	2246, B1.2
Not-go gages for holes from 100 to 500-mm in diameter	2247, B1.4
General table of different gages with reference to respective DIN standards	2259, B1.1
Handles for round-ended gages	2243
Not-go ring gage	2254
POLAND	**PN**
Tolerances and fits	M-02100
SPAIN	**UNE**
Tolerances and fits. Table of related terms in five languages	5023

621.88 Means of Attachment, Fastenings

AUSTRALIA	AS
Standard rules for the design, construction, maintenance and inspection of colliery detaching hooks	CM.1-1951

AUSTRIA	ÖNORM
Knurled nuts, high and low, size M 1 to M 10	M 5245,5246

BELGIUM	NBN
Keys	66

GERMANY	DIN
Unfinished bolts, metric thread hexagon head, with or without hexagon nut	601,B1.1
Hexagon locating bolts with long and short threaded part	609,610
Studs screwing-in about 1 diam in steel, metric thread	938,B1.1
Studs screwing-in about 1.25 diam in cast iron	939,B1.1
Square-head machine screw with dog point, metric	480,B1.1
Hexagon nuts for ring spinning frames	64032
Whitworth fine thread, 20-189 mm diameter	240
Single box-end wrenches	3111
Straight pins, hardened	6325
Keys, square and gib-head tapered	143
Metric screw thread 0.3 to 68mm nominal diam	13,B1.1
Symbols for rivets and screws in steel constructions	407
Lockwashers	93
Wire nails	1151
Hexagon nuts, self-locking	985
Cap-nuts, self-locking	986
Self-locking nuts with riveting flanges	987

MEXICO	DGN
Wood screws	B 45-1951

NORWAY	NS
Glass and cap threads diam 8-125mm	590 A
Glass and cap thread; tolerances and inspections	591 M
Button-head rivets, type B (bridge building)	65 B
Button-head rivets, type K (boiler rivet)	66 B
Truncated-cone head rivets, type S (shipbuilding)	726
60° countersunk-head rivets	728
60° countersunk oval-head rivets	729

POLAND	PN
Round (knuckle) screw thread	M-02035
Square socket wrench with cross-bar	M-64990
Double ended socket wrench	M-64993
Eye-screw for lifting purposes	M-89194
Different sizes set screws	M-82272, thru 82276
Round-head grooved rivets	M-82981
Flat-head grooved rivets	M-82982
Hexagon castle nuts, semi-finished and finished	M-82148/9

RUMANIA	STAS
Truncated cone head rivets	801
Flat-head wood screws	1452
Steel nails, finishing. Dimensions	1972

SWITZERLAND	SNV
Hexagon socket-countersunk head screws fully and partially threaded, Whitworth ¼ in. to ¾ in.	12210,12212
Hexagon socket-countersunk head screws fully and partially threaded, metric M5 to M20	12211,12213
Eight standards for hexagon socket set screws, flat-point, cone-point, dog-point, cup-point, Whitworth ¼ in. to 1 in., metric M4 to M24	12230 thru 12237
Cup-type washers	12752 a
Wrench and wrench openings. General rules	35899
Wrenches, openings from 6 to 110 mm	35900 b
Wrenches, double end, openings from 6 to 60 mm	35901 b

UNION OF SOVIET SOCIALIST REPUBLICS	GOST
32 new standards for different nuts, rough, semi-finished and finished (all in one booklet)	2524-2528, 5909-5935
The same booklet contains reprints of the following four earlier standards:	
Nuts of general use	B-1528-42
Acceptance rules, packing and marking fastening materials	B-1471-42
Marks indicatiing left-hand thread	2904-45
Wing nuts	3032-45

621.89 Lubrication

AUSTRIA	ÖNORM
Bearing lubricating oil, grades LS1, LS2, LS3	C 2020
Dark lubricating oil, grades DS1, DS2, DS3	C 2025
Spindle oil, grades S1, S2	C 2030

628.2 Sewers

AUSTRIA	ÖNORM
Rules for the installation of house sewer piping	B 2501
Rules for the installation of house-cleaning appliances	B 2502

GERMANY	DIN
Sewer pipes with round manhole	1391
Protection of drainage installation	1997
Manhole sewer covers, light type	1233

665.3 Vegetable Oils, Fats and Waxes

ARGENTINA	IRAM
Determination of refractive index of vegetable oils	5505

IRELAND	IRISH STANDARDS
Linseed oil for paints	14:1949
Liquid driers for paints	15:1949

RUMANIA	STAS
Furfural, raw	1778
Castor oil, medicinal	1780
Vegetable oil sulfonate	1408

666 Glass and Ceramic Industry

GERMANY	DIN
Bottles for sparkling wine	6096
Mineral water bottles	6075
Candy glass jars	5091

INDIA	IS
Ordinary, rapid-hardening and low heat Portland cement	269

IRELAND	IRISH STANDARDS
Portland cement	1:1949
Concrete plain roofing tiles and fittings	3:1949
Concrete interlocking roofing tiles	4:1949
Coarse and fine aggregates from natural sources, for concrete	5:1949
Concrete cylindrical pipes	6:1949
Asbestos-cement slates and sheets	7:1950
Hydrated lime for building purposes	8:1949
Solid concrete building blocks made with natural aggregate	20:1949
Gypsum plaster	27:1950
Concrete land drainage pipe	31:1951

MEXICO	DGN
Kaolin tiles	H 1-1951

NETHERLANDS	N
Laboratory glassware. Classification	1747

POLAND	PN
Cement-physical tests	B-04300

RUMANIA	STAS
Pipes and fittings in artificial stone	1743
Refractory bricks for steel casting furnaces	1857,1858, 1859
Glass for miner's lamp	1775
Ceramic tiles for stoves	1798
Refractory products for Siemens-Marten converters	1852
Safety glass windows	949
Refractory clay pipes	1625
Refractory clay products. Bricks and blocks for furnaces	1627
Abrasive materials. Size of grain	1753

SPAIN	UNE
Glass fiber	43012
Glazed wall tiles	24007

SWEDEN	SIS
Determination of the resistance of glass to water	P 71 10 31

SWITZERLAND	VSM
Form of bottle neck for crown-cap and ALKA closures	79100

URUGUAY	UNIT
Blocks made of Portland cement	78-50
Asbestos-cement pipes	79-51
Undulated tiles of asbestos-cement	81-51

How to Charge Unusual Injuries

AS a help to companies using the American Standard Method of Compiling Industrial Injury Rates, Z16.1-1945, a Committee of Judges appointed by ASA Committee Z16 studies unusual accident cases and advises on how the standard is to be applied. The most recent of these cases are reported below.

Monthly compilation of a company's accident toll shows at a glance when some change in operations or unforeseen new hazard has caused a jump in the injury rate. Thus immediate action can be taken to eliminate the hazard.

Uniform application of the standard is important, therefore, if the injury rate is to be depended on as a guide.

Safety engineers are invited to obtain interpretations of the standard by sending the facts on doubtful cases to the American Standards Association. Reprints of all the published decisions can be obtained from ASA.

CASE 170. A company was unable to determine clearly the points of distinction between the decisions in Cases 34 and 100, and therefore submitted the following case for decision.

A steamfitter was instructed by his supervisor at approximately 8:15 on the morning of July 23 to hook up the suction on the pump at the river. The employee was advised to take along a co-worker to assist him. Their first job was to place some couplings for the suction line, which took approximately 30 minutes to complete. They then lined up the pump and, to couple the pump and suction line, these two men with the assistance of two others carried a length of 8-inch pipe, 8 feet long, a distance approximately 100 feet. The employee then cut off, with a welding torch, 6 feet 4½ inches of the pipe which the four men lifted down a 3-foot embankment and placed in a trench. Then the employee and his co-worker stopped to rest.

Having rested, the two men had a drink of water and resumed work. The employee and co-worker, with four additional men, then moved a 20-foot length of 8-inch pipe a distance of 75 feet. Employee was at the rear of the pipe to guide it. Then the six men lifted the pipe four times to place it in position to hook up the suction.

Employee then walked to a stockpile and selected a 6-foot length of 4-inch by 4-inch timber which he brought back. He then squatted over the pump some four minutes, got up, told his co-worker he was too hot and that he was going over to a shady spot to rest. He walked approximately 50 feet and fell. An ambulance was called which carried him to the medical center where he was pronounced dead upon arrival at 11:15 A.M.

Autopsy performed July 24 revealed that death was caused by either sun stroke or heat stroke.

Statement of the co-worker was quoted in part concerning the rest period taken before carrying the 20-foot length of 8-inch pipe: "We went over into the shade. We were both wringing wet and I asked Durham during the break why he was sweating so much and had he been drinking (alcoholic beverages). He said he didn't drink and that he hadn't drunk in four years since he had an ulcerated stomach. He didn't complain any at the time and gave no explanation for his unusual perspiration. I had worked with him almost all last week and I hadn't noticed him sweating this much."

Given below are hourly temperatures and relative humidity on July 23, for the general area in which deceased was working. Peak recordings for the area from July 12 to 22 are also shown:

	July 23			
Time	*Temp (F)*	*Percent Rel Hum*	*Date*	*Peak Temp (F)*
			July	
			12	97
8 A.M.	79	82	13	101
9 A.M.	84	72	14	102
10 A.M.	89	55	15	100
11 A.M.	91	50	16	99
12 NOON	93	48	17	96
1 P.M.	95	42	18	95
2 P.M.	96	39	19	94
3 P.M.	97	38	20	92
4 P.M.	97	38	21	94
5 P.M.	96	39	22	94

The employer believed that the fatality was non-industrial on the basis of opinion below:

"That the weather condition at the time of and immediately prior to employee's death was not unusually severe. In fact, the temperature at the time of his death was lower than the official high for seven of the twelve days preceding his death, and was four degrees lower than the peak recorded later that same day.

"That employee had not performed heavy work on the day of his death, and in fact had done very little work of any description on that day.

"That exposure to high temperatures and direct rays of the sun were routine conditions of living in this area, not limited to a few crafts, tasks, or job assignments."

The committee decided that this injury should be included in the industrial injury rates as a fatal case with a time charge of 6,000 days. The committee believed that because of this employee's work he was exposed to more strenuous activities in the sun than would be normal for the general public.

CASE 171. A company asked if the following should be considered as an industrial injury and, if so, should it be classed as a hernia with a standard time charge of 50 days.

The employee in question was assigned a job refilling holes that had previously been opened to determine and repair leaks in underground piping. The following Monday, during the forenoon, he reported to his supervisor that his side was sore and was sent to the Safety Engineer for a formal report. In this report he claimed to have hurt his side at approximately 4 P.M. the previous Friday, tramping down dirt in the filled hole. The dirt, being soft, allowed his foot to go down further than he expected; this caused a pain in his side. He then took time out for a smoke and a drink of water, then filled two more holes before quitting for the day at 4:30 P.M.

His supervisor cannot give any further information because his gang's work had caught up to the extent that he could dispatch this man to refill holes. The employee was alone during this part of the day and did not report any undue occurrences then or at the end of the day. His report was made on the following Monday, at which time he was under another supervisor. On reporting to the doctor, a hernia on the right side was revealed. Operative correction was indicated and has been performed.

The company asked if the above case was considered to meet the requirements of paragraph 2.2 of the American Standard concerning hernias.

The committee agreed that this was somewhat on the borderline, but finally decided that the description, as submitted, met the three requirements for hernia cases as shown in the standards. The committee decided, therefore, that this case should be included in the industrial injury rates as a hernia case with a time charge of 50 days.

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CASE 172. A bias machine operator in a rubber mill, employed on this same job for 11 years, was lifting a hand truck and roll of duck when he felt a pain at the groin. He did not slip and there was no accidental movement. Apparently neither the truck, nor the floor, nor any machine in the neighborhood was defective in any way. The employee was sent to a doctor, who examined the patient and said he had an indirect hernia.

The committee agreed that the description provided a clear history of an incident or accident in accordance with 2.2(a) of the standard. They also agreed that this case met the requirements of 2.2(b). They were, however, unable to determine from the information given as to whether, at the time of this accident, the immediate pain was so acute that the employee was forced to stop work until the pain subsided. In other hernia cases, the committee has recognized that stopping even momentarily might fulfill this condition.

The committee was unable to make a definite decision in this case.

CASE 173. The employee's regular job was the installation and maintenance of meters on gas lines outside the plants proper. He had a company car assigned to him which he used in all phases of his work. It was common practice for this man to work considerable overtime and as a matter of course he used his own discretion in the use of the company car. He had a headquarters at one of the plants but did not always clock out there if he was working in a distant location and after regular hours. In these instances he would drive the company car home.

On the day in question this employee and his immediate supervisor were working in a gas field some 15 or 20 miles from the plant. Both had a company car. They had previously arranged a dinner together at the supervisor's home. They finished their work at approximately 4:15 P.M. (4:00 P.M. was regular quitting time for these men) and the supervisor told the employee to go directly to his (the supervisor's) home as there was no need for both to go to the plant to see whether they were through for the day or whether there was more work to be done. After visiting the plant the supervisor then drove home where he informed the employee that they were through for the day. (This did not preclude the possibility of an emergency callout which these men do have.)

The employee ate dinner with the supervisor, and afterward was driving to the plant to leave the company car and pick up his own when he became involved in an automobile collision and was injured. The company wished to know whether this employee should or should not be considered "on duty" at the time of the collision.

The committee decided that this employee should be considered as within the course of his employment at the time of this collision and that the injury therefore should be included in the industrial injury rates. One of the members commented that the injury should be considered as arising out of and in the course of employment because the employee was driving the company car to the plant to leave it there and terminate his work for the day, even though this did occur at an odd hour of the day.

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CASE 174. An employee alleged that he bumped the inside of his right knee against a beam journal while working on the job on October 4. The alleged injury was reported to the employee's supervisor and to the First Aid attendant on that day. On October 9 employee complained to his supervisor that his bruised leg had turned blue and was bothering him considerably. Employee was referred to Dr A for medical care. Dr A gave diathermy treatment and in doing so, burned and blistered a large portion of the knee-cap area. Employee stated he did not care to go back to Dr A but requested he be referred to Dr B. Employee was referred to Dr B on October 11. Dr B examined the knee, cleansed the burn, and applied a pressure bandage. Employee saw Dr B for a second office call on October 15. Both bruise and burn appeared to be doing nicely. Treatment was the same as given on October 11.

On October 18 Dr B admitted employee to hospital for treatment of burn only. Bruised area was doing nicely and not giving any trouble. Hospitalization would not have been necessary if it were not for blistered knee, and employee could have continued working if it were not for the fact that he had to stay off his leg and keep his knee in a straight position so that the blistered area over knee-cap could heal.

Employee had continued working from October 4 to October 18, the day that he had been admitted to the hospital. The company felt that the loss of time from work, which began on October 18, was the result of mistreatment, and they therefore questioned whether this case should be considered an industrial injury.

The committee decided that this injury should be included in the industrial injury rates. Some of the members commented that this was similar to previous decisions shown in cases 12, 33, and 65.

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CASE 175. An operator in a chemical plant suffered an eye injury from a drop of lime slurry. He had finished making up a batch of lime slurry and then proceeded to clean his equipment. He hit the edge of the tank with a hand scraper causing a drop of lime slurry to splash and to enter his left eye. This resulted in a lime burn to his left eye. There were no other areas burned or in any way affected.

His eye was washed with water, and he was then taken to a physician who was a general practitioner. It was an established plant policy to have all injuries of this type, regardless of how slight they might appear, treated by a physician. The doctor washed out the eye, applied an ointment, and sent the man back to work.

After working about an hour and a half, the injured still reported pain in his eye. His supervisor therefore excused him for the rest of the shift and saw that the injured was taken to his home. The injured was scheduled to work the following day. During the morning a safety department employee took him to an eye specialist about 20 miles distant. The eye specialist treated the injured's eye and advised him to stay home from work. The same procedure was followed the next day. On the following day the injured was again taken to the eye specialist. During this trip it developed that the eye specialist had been advising the injured not to return to work because he (the doctor) did not know the nature of the work and did not realize that a pad over the injured eye would not hinder the employee's ability to perform his regular duties. The specialist upon learning of the nature of the work advised the injured that he could return to work. Further, he stated that had he known the facts at the time of the first visit, he would not have advised the injured to absent himself from work. The injury actually was not very serious. The company asked whether or not this injury should be included in the rates.

The committee decided that this injury should not be included in the industrial injury rates. The members were of the opinion that this man stayed away from work due to a misunderstanding of the physician as to the character of his work. Because of the definite statement of the doctor that this man was able to do his regular work, in spite of the injury, it would appear that the accident was in reality not sufficient to cause lost time.

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CASE 176. A company asked for a clarification with regard to the requirements for parking lots in 2.1.3 of the standard. This company maintained a regular parking lot for its employees, but this parking lot was closed on Sundays. The employee in question was required to work overtime on Sunday and, because the parking lot was closed, he drove his car into the shop yard and parked in a space adjoining the power house. This was done with the approval of the supervisors; this particular space had been designated for parking cars on Sundays when the regular lot was closed. As the employee reached the side of his car on the way home at the end of his shift, he slipped on an icy spot and fell, sustaining an injury which resulted in lost time.

The company sent a sketch of the area which had been designated as a Sunday parking lot and asked if this injury should be excluded from the rates on the basis of 2.1.3 of the standard.

The committee first considered this case by correspondence and then discussed it at a meeting. The committee finally decided that under the particular circumstances described in this case the injury should not be included in the industrial injury rates. The members furthermore stated that because of the borderline nature of this case, this particular decision should not be considered as a precedent for other cases which might appear to be similar in nature.

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CASE 177. An employee operating a printing press walked from the operating end of the press to the take-off belt to inspect the quality of the printing job when he slipped, but he did not fall.

After finishing his shift, the employee reported to the medical department. Plant doctor could find nothing wrong and hence sent him to a local hospital for x-ray which did not reveal anything constructive.

The next morning the employee's wife telephoned that he was experiencing great pain. Plant doctor advised that he be sent to the hospital after which he arranged for Dr M to administer the case. Plant doctor believed the pain in the abdomen was a reflected pain from a possible lower back sprain.

After x-ray and further examination Dr M diagnosed the pain to be caused by an abdominal disorder, very probably appendicitis, and treated it as such. After further hospitalization the flareup subsided, at which time the employee returned to work with no further complaints.

The company stated that the employee's time away from the plant was caused by the abdominal disorder he experienced, rather than from a back strain.

The committee decided that this case should not be counted in the industrial injury rates. This decision was based on medical opinion obtained by the committee that there were no known cases of appendicitis aggravated by physical exertion, and the committee therefore believed that the lost time in this case was not connected with the man's employment.

AMERICAN STANDARDS

Status as of April 22, 1952

Legend

Standards Council.—Approval by Standards Council is final approval as American Standard; usually requires 4 weeks.

Board of Review.—Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks.

Correlating Committee.—Approve standards to send to Standards Council or Board of Review for final action; approval by correlating committee usually takes 4 weeks.

Building

American Standard Just Published—

Bituminous Mixing Plant Inspection, Recommended Practice for, ASTM D290-51; ASA A37.43-1951 $.25
Sponsor: American Society for Testing Materials

In Board of Review—

Sand-Lime Building Brick, Specifications for, ASTM C73-51; ASA A78.1 (Revision of ASTM C73-39; ASA A78.1-1942)

In Correlating Committee—

Building Code Requirements for Structural Steel (Riveted, Bolted, or Welded Construction), A57.1 (Revision of A57.1-1943)
Sponsor: American Society of Civil Engineers; American Society of Steel Construction

Excavations and Foundations, A56.1
Sponsor: American Society of Civil Engineers

Non-Slip Oxychloride Composition Flooring and Its Installation, Specification for, A88.5

Terrazzo Oxychloride Composition Flooring and Its Installation, Specification for, A88.6

Industrial Granolithic Oxychloride Composition Flooring and Its Installation, Specification for, A88.7

Oxycement Underlayment and Its Installation, Specification for, A88.8

General Purpose Flooring and Its Installation, Specification for, A88.2 (Revision of A88.2-1951)

Heavy Duty Flooring and Its Installation, Specification for, A88.3 (Revision of A88.3-1951)

Base Coat Flooring and Its Installation, A88.4 (Revision of A88.4-1951)
Sponsors: American Society for Testing Materials; National Bureau of Standards

Free Cutting Brass Rod and Bar for Use in Screw Machines, ASTM B16-51; H8.1 (Revision of ASTM B16-49; H8.1-1949)

Seamless Copper Pipe, Standard Sizes, ASTM B42-51; ASA H26.1 (Revision of ASTM B42-49; ASA H26.1-1949)

Seamless Red Brass Pipe, Standard Size, ASTM B43-51; ASA H27.1 (Revision of ASTM B43-49; ASA H27.1-1949)

Seamless Copper Water Tube, ASTM B88-51; H23.1 (Revision of ASTM B88-50; ASA H23.1-1949)

Copper-Silicon Alloy Wire for General Purposes, ASTM B99-51; ASA H30.1 (Revision of ASTM B99-49; ASA H30.1-1949)

Copper and Copper-Base Alloy Forging Rods, Bars, and Shapes, ASTM B124-51; ASA H7.1 (Revision of ASTM B124-49; ASA H7.1-1949)

Brass Wire, ASTM B134-51; ASA H32.1 (Revision of ASTM B134-50; ASA H32.1-1951)

Leaded Red Brass (Hardware Bronze) Rods, Bars, and Shapes, ASTM B140-51; ASA H33.1 (Revision of ASTM B140-50; ASA H33.1-1951)
Sponsor: American Society for Testing Materials

Chemicals

In Correlating Committee—

Spirit of Turpentine, Specifications for, ASTM D13-51; ASA K32 (Revision of ASTM D 13-34; ASA K32-1937)
Sponsor: American Society for Testing Materials

Consumer

In Standards Council—

Standards for Rayon Fabrics, and Test Methods for Rayon Fabrics, L22
Sponsor: National Retail Dry Goods Association

Specifications for Chip Soap (Revision of ASTM D 496-39; ASA K60.1-1948)

Specifications for Powdered Soap (Nonalkaline Soap Powder) (Revision of ASTM D 498-39; ASA K60.3-1948)

Specifications for Liquid Toilet Soap (Revision of ASTM D 799-45; ASA K60.14-1948)
Sponsor: American Society for Testing Materials

Electrical

Proposed American Standard Just Published—

Transformers, 67,000 Volts and Below; 501 through 10,000 kva, 3 phase; 501 through 5,000 kva, 1 phase, C57.12a $.60
Sponsor: Electircal Standards Committee

American Standards Approved—

Methods of Testing Electron Tubes (RTMA Std 50, IRE 7.S2) ASA C60.5-1952

Measurement of Direct Interelectrode Capacitance (RTMA Std ET-109-A; NEMA Pub 505-A) ASA C60.6-1952
Sponsor: Joint Electron Tube Engineering Council

In Correlating Committee—

Rated Control Voltages and Their Ranges for Alternating Current Power Circuit Breakers (Revision of C37.8-1945), C37.8
Sponsor: Electrical Standards Committee

Tinned Soft or Annealed Copper Wire for Electrical Purposes (Revision of ASTM B33-50; ASA C7.4-1951) ASTM B33-51; ASA C7.4

Soft Rectangular and Square Bare Wire for Electrical Conductors (Revision of ASTM B48-49; ASA C7.9-1951) ASTM B48-51; ASA C7.9

Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Members for Electrical Conductors (Revision of ASTM B172-50T; ASA C7.12-1951) ASTM B172-51T; ASA C7.12

Rope-Lay-Stranded Copper Conductors Having Concentric and Stranded Members for Electrical Conductors (Revision of ASTM B173-50T; ASA C7.13-1951) ASTM B173-51T; ASA C7.13

Bunch-Stranded Copper Conductors for Electrical Conductors (Revision of ASTM B174-50T; ASA C7.14-1951) ASTM B 174-51T; ASA C7.14
Sponsor: American Society for Testing Materials

Submitted to ASA for Approval—

Power-Operated Radio Receiving Appliances (Revision of C65.1-1942)
Sponsor: Underwriters' Laboratories

Pure-Tone Audiometers for Screening Purposes, Z24.12
Sponsor: Acoustical Society of America

Horticulture

In Board of Review—

Nursery Stock, Z60.1 (Revision of Z60.1-1949)
Sponsor: American Association of Nurserymen

Mechanical

American Standards Just Published—

Nonmetallic Gaskets for Pipe Flanges, B16.21-1951 $1.00
Sponsors: Heating, Piping, and Air Conditioning Contractors National Association; Manufacturers Standardization Society of the Valve and Fittings Industry; The American Society of Mechanical Engineers

Square and Hexagon Bolts and Nuts, B18.2-1952 $2.00
Sponsors: Society of Automotive Engineers; The American Society of Mechanical Engineers

Physical Specimens of Surface Roughness and Lay, B46.2-1952 $1.00
Sponsors: Society of Automotive Engineers; The American Society of Mechanical Engineers

American Standards Just Approved—

Accuracy of Engine and Tool Room Lathes, B5.16-1952
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers; Metal Cutting Tool Institute; National Machine Tool Builders Association

Stainless Steel Pipe, B36.19-1952
Sponsors: American Society of Mechani-

cal Engineers; American Society for Testing Materials

In Board of Review—

Round Unslotted Head Bolts, B18.5 (Revision of B18.5-1939)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Ring-Joint Gaskets and Grooves for Steel Pipe Flanges, B16.20
Sponsors: American Society of Mechanical Engineers; Heating, Piping, and Air Conditioning Contractors National Assn; Manufacturers Standardization Society of the Valve and Fittings Industry

Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service, (Revision of ASTM A 194-48; ASA G38.1-1949) ASTM A 194-51; ASA G38.1)
Sponsor: American Society for Testing Materials

Acme Threads (Revision of B1.5-1945)

Stub Acme Screw Threads, B1.8
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

In Correlating Committee—

Preferred Thicknesses for Uncoated Thin Flat Metals (Under 0.250 In.), B32.1 (Revision of B32.1-1941)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

American Standards Reaffirmed—

Cast-Iron Pipe Flanges and Flanged Fittings, 800 Lb Hydraulic Pressure, B16b1-1931 R 1952

Cast-Iron Pipe Flanges and Fittings (For Maximum WSP of 25 Lb), B16b2-1931 R 1952

Steel Socket Welding Fittings, B16.11-1946 R 1952

Brass or Bronze Screwed Fittings, B16.15-1947 R 1952

Cast-Iron Flanges and Fittings for Refrigerant Piping (Class 300), B16.16-1948 R 1952
Requested by: American Society of Mechanical Engineers

American Standard Withdrawn—

Cast-Iron Long Turn Sprinkler Fittings, B16g-1929 R 1947
Requested by: American Society of Mechanical Engineers; Heating, Piping, and Air Conditioning Contractors National Assn; Manufacturers Standardization Society of the Valve and Fittings Industry

Motion Picture

In Board of Review—

16-Mm Motion Picture Projection Reels, PH22.11 (Revision of Z22.11-1941, Z52.33-1945)

Splices for 16-Mm Motion Picture Films for Projection, PH22.24 (Revision of Z22.24-1941, Z22.25-1941, Z52.20-1944)

Splices for 8-Mm Motion Picture Films, PH22.77
Sponsor: Society of Motion Picture and Television Engineers

Photography

In Correlating Committee—

Spectral Densities of Three-Component Subtractive Color Films, PH2
Sponsor: Photographic Standards (Correlating) Committee

Safety

American Standard Approved—

Rubber Insulating Gloves, J6.6-1952 (Revision of ASTM D 120-40; ASA C59.12-1942)
Sponsor: American Society for Testing Materials

In Correlating Committee—

Safety Code for Mechanical Power Transmission Apparatus (Revision of B15-1927)
Sponsors: Association of Casualty and Surety Companies, Accident Prevention Department; International Association of Governmental Labor Officials

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General Motors has standardized the pistons and motors of its diesel locomotives so that there is interchangeability between the heavy freight switcher locomotives and the streamliners.

• • **Engineers working on power problems** will be interested in the latest edition of the American Standard for Capacitor Units, C55.1-1951, just approved by the American Standards Association.

The standard being superseded was issued in 1934 and is now very much out-of-date. It covered capacitors for all applications. The new standard covers shunt and series capacitor units for use on a-c power transmission and distribution systems, at nominal frequencies of 60 cycles and below, used for the purpose of modifying the performance of the system at normal frequencies. By definition, the standard excludes high frequency capacitors for use in communication service and also excludes capacitors used in connection with instrumentation.

The standard applies to capacitors used in power systems and industrial plants for correction of power factor, and for voltage regulation when connected in shunt across the line. For the first time in an American Standard, capacitor units are included for connection in series in transmission and distribution lines for improvement of system stability and other purposes.

In both cases the standard covers only the capacitor units themselves and does not embrace assemblies of units or auxiliary switching equipment associated with them.

The standard establishes the tolerances in the rating of capacitor units relating to voltage and kilovolt-amperes for continuous operation and for short time periods. Specifications are established for terminal-to-terminal voltage, insulation class, temperature rise, bushing characteristics, routine tests, design tests, and name plate marking.

There has been an enormous growth in the use of capacitors in recent years and the issuance of this up-to-date standard has been badly needed by the industry.

Development of the standard was sponsored by the American Institute of Electrical Engineers under the procedure of the American Standards Association. Experts in all phases of transmission and distribution problems assisted in its preparation

Copies of the American Standard for Capacitor Units, C55.1-1951, can be ordered from the American Standards Association, at 40 cents per copy.

• • **The Company Member Conference** is holding its Spring meeting May 21 and 22 at Norfolk, Virginia, with its theme "Standards—The Link Between Industry and the Armed Forces." By special arrangement with the U.S. Navy, the first day's meeting will be aboard the aircraft carrier, *USS Midway,* Rear Admiral Joseph W. Fowler (USN, ret), Munitions Board, Washington, will be the principal speaker.

On the second day, May 22, CMC members are invited to tour the Navy's shore installations. These are of special interest since the Norfolk Naval Base is headquarters of Admiral Lynde D. McCormick, Supreme Allied Commander, Atlantic. His position is the naval counterpart of that of General Dwight D. Eisenhower, Supreme Allied Commander, Europe.

Because of security requirements, CMC members attending the meeting will be asked to supply evidence of citizenship.

Caveat Emptor Rule Upset

Standards Engineers Society hears discussion on impact on business of standards for consumer goods

SOME 35 members of the Standards Engineers Society and guests met at the Engineers Club, Philadelphia, February 25. Feature of the occasion was a symposium on consumer standards, with Dr Paul G. Agnew, Consultant, American Standards Association, and Miss Ardenia Chapman, Dean of the Home Economics Department, Drexel Institute of Technology, as speakers. Miss Chapman is not only a member of ASA's Board of Directors and Standards Council but is also a program chairman of the Consumer Advisory Committee of the Philadelphia Chamber of Commerce.

Lively discussion attested the interest of the engineers in standards for consumer goods as they affect their own purchasing for home use and personal attire.

Speaking on "The Impact of Standards for Consumer Goods on Industry," Dr Agnew said that the main function of a standard is to facilitate the passage of goods past one of the transition points in production or distribution. Retailers have great trouble with these transition problems, he explained. Citing the history of consumer goods standards, he pointed to the fact that only within the past century has there been an attempt to upset the old business rule "Caveat emptor"—"Let the buyer beware." A corporation has facilities for checking on the product it buys which are not available to consumers, he said. Certification that a product meets the requirements of a standard is the consumers only resource.

"From the beginning the American Home Economics Association has had as one of its major objectives the establishment and production of consumer goods", Miss Chapman pointed out. "As a matter of fact", she said, "at the organization meeting of the Association in 1908, one of the Charter members stressed the need for textile standards. More standards progress has taken place since that time than is generally realized," Miss Chapman declared.

As a basis for this statement, she pointed to the standards of the Department of Agriculture for canned foods and dairy products; the consumer standards developed under ASA procedure; the use of specifications by large retailers in their own purchasing; the start that the AHEA consumer interests committee had made in the development of consumer standards; the increasing use of specifications and standards throughout industry; the growth of consumer-goods-rating agencies; the increase in the public understanding of standards.

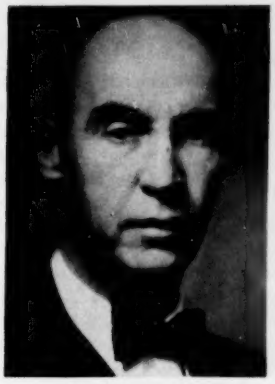
Miss Chapman's analysis of the function and problem of consumer goods standards was as follows:

"It is the job of a good standard to make clear to buyer and seller alike the essential characteristics of a class of goods. It is not the business of a standard to rule lower grade products off the market but to identify them so that the consumer has the facts necessary to decide which product best suits her needs.

"The introduction of a standard into the merchandising process is a change in commercial practice, and we cannot bring this about by 'standardizing in a vacuum.' We must 'sell' our ideas to the trade, whether we cooperate with the trade through ASA committees or whether we seek to persuade the trade to adopt standards which we have formulated ourselves.

"Under our present industrial system, the trade will make its final decisions from sales records; or, as the trade insists, the final counting of consumer votes must be done by the cash register.

"Compromise is a part of the normal process of negotiation—and perfection is rarely attained at a single stroke."



Paul G. Agnew

Ardenia Chapman

The Society is circulating a proposed constitution for the approval of members. Some comments, proposing only minor changes, have already been received. A membership drive will soon be undertaken, it was reported. Nominations for permanent officers will be made by a committee elected at the meeting.

The next meeting of the Society will be held at 8:00 P.M. on Thursday, June 5 in New York City, M. S. Gokhale, program chairman reported. The place for this meeting will be the Johnny Victor Theatre, in RCA Exhibition Hall, 40 West 49th Street. Members were also invited to submit papers expressing their personal viewpoint on standards, for possible publication in *Standards Engineering*, to Mr Gokhale, 1760 Hillcrest Avenue, Merchantville 8, New Jersey.

Electrical Terms

(*Continued from page 138*)

tary basis by men who hold responsible positions and it is gratifying that with their regular duties they can devote so much time to this activity.

At the present time all but a few of the subcommittees have completed their first draft. These several drafts have already been circulated for review among the sectional committee members, to the AIEE Technical Committees, and among those subcommittee members and others who have requested opportunities to examine specific groups.

These drafts have thus been widely reviewed and a vast amount of correspondence relating to proposed changes has passed to and among the several subcommittees. Inevitably there have been duplications among the different groups, and the definition of a particular term by one subcommittee may not take into account all its applications in other fields. The assignment to particular Groups of duplicate terms, and agreement over the final wording of the definitions, taking into consideration the scope of each, is practically completed among the different subcommittees. Also, each subcommittee has about completed the revision of its definitions in accordance with the comments that have been received from the many reviewers, and hence it should now be in its final form. This final revision of each Group will then be submitted to the members of the sectional committee for their approval. Because of the wide representation on each subcommittee, which includes organizations represented on the sectional committee, and the fact that wide circulation has just been completed, it is hoped that completed revisions will be promptly approved. Shortly thereafter they should be available for general distribution.

• • **John R. Townsend,** director of materials applications engineering of the Bell Telephone Laboratories and chairman of ASA's Standards Council, has been named to serve as consultant on materials conservation to the Director of Defense Mobilization.

1875—First International Conference on Standards

The first full-scale formal conference on international standards was held 77 years ago. After five years of preliminary work, the "plenipotentiaries of most of the leading occidental nations," including the U.S., met in Paris in the spring of 1875 to attend an International Conference on Weights and Measures. Of the 19 nations present, 17 signed a convention which provided for the establishment and maintenance of a permanent International Bureau of Weights and Measures to be situated near Paris. The French Government set aside a plot of ground in the Park of St. Cloud for the Bureau and declared it neutral territory.

The latest international meeting on standards is the Second Triennial Plenary Session of the International Organization for Standardization (ISO) to be held June 9-21, 1952 in New York. Thirty-three nations belong to the ISO, the American Standards Association representing the United States.

Mr Townsend will collect and organize information as to materials conservation, and will promote throughout industry the idea of conservation and the use of substitute materials, announcement of his appointment explains.

• • **The Wood Industries Division,** American Society of Mechanical Engineers, is considering the possibilities of the standardization of dimensions of woodcutting instruments, tools, and equipment. The project on the standardization of saw arbors was turned over to the Association of Manufacturers of Woodworking Machinery more than a year ago for further study, with the recommendation that it be adopted by the American Standards Association, according to a report submitted by T. D. Perry, chairman, Special Committee. Lively interest in this project is maintained despite the problems created by war-induced scarcity of raw material.

The standardization of carbide-tipped tools was a project brought to the attention of the Society by industry itself. So far it has related to unground knife blank standards

which are based on an industry survey, as well as on saw-tip standards, developed by a committee within the industry. The next step is the development of a larger committee representing the manufacturers of woodworking machinery using these carbide products, and the users of woodworking machinery equipped with such carbide tools. Professor E. S. Johnson is in charge of this committee.

These preliminary standards have been published in *Wood*, July, 1951.

From *Mechanical Engineering*, February 1952

• • **The American Society of Mechanical Engineers,** sponsor for Committee B31 on code for pressure piping, announces that case No. 5 reported in STANDARDIZATION, February 1952, page 40, has been annulled. The stresses provided by this case are lower than new stresses adopted by the ASME Boiler Code and therefore this case is not necessary, ASME explains. The American Society of Mechanical Engineers also calls attention to a correction in case 7 reported on this same page. Section E of this case was inadvertently omitted. Case E should read: "60 per cent of the average or 80 per cent of the minimum stress to produce rupture in 100,000 hours as reported by test data."

Power Transformers

(*Continued from page* 144)

those in the small-power transformer field to realize the economic and other benefits that have long been evident in pole-type distribution transformers. Wide acceptance of this standard, the first major accomplishment of the subcommittee, will encourage exploration of the possibility of similar standards for other types and ratings of power transformers.

For copies of Proposed American Standard C57.12a write the American Standards Association, Incorporated, 70 East 45 Street, New York 17, N. Y. Single copies are 60 cents each. Discounts are given on quantity orders.

• • **An analysis of existing specifications** and how they apply to the design and selection of materials for power piping systems is contained in an article "Power Plant Piping" published in *Heating, Piping, and Air Conditioning*, January 1952. In addition to the technical discussion in the text, the article provides a table of allowable *S* values for pipe in power piping systems; and a table of suggested specifications for power piping materials. The numerous figures include an analysis of relative merits of several tentative piping layouts; allowable *S* values; and how precipitation of graphite may occur; among others. Standards used in making the analyses are the American Standard Code for Pressure Piping, the ASME boiler code; and a number of ASTM specifications for pipe or tubing.

• • **Egypt** recently announced that it has adopted the metric system of weights and measurements as the recommended system of the country.

This Month's Standards Personality . . .

Chester Laurens Dawes, Associate Professor of Electrical Engineering at Harvard University, is also widely known as consulting engineer to many commercial organizations, as author of widely used textbooks on alternating and direct currents, and for his research on insulating materials. Because of his eminence in the engineering field he is contributor to the *Standard Handbook of Electrical Engineering* and Marks' *Mechanical Engineers' Handbook*. One of his papers, discussing recent work to improve the characteristics of mica used for insulation in high-temperature installations, is now being prepared for publication by the American Institute of Electrical Engineers. A preliminary draft, "Built-Up Mica Plate for High-Temperature Applications," was presented at a meeting of the Insulation Committee of the National Research Council in November 1950. Since that time Professor Dawes has been carrying out further experiments on the subject.

Although Professor Dawes has been in the educational field since 1909, his accomplishments are far from being entirely professorial. As a result of the research he has done, he holds several patents on electrical devices; he is also vice-president and director of the New England Mica Company, in addition to his work as consultant.

As a member of both the American Society for Engineering Education and the American Association of University Professors, he takes an active interest in developments in the educational field, and recently presented a paper at an AIEE meeting on improving electrical engineering curricula.

Professor Dawes holds an honorary A.M. degree from Harvard and an honorary Doctor of Engineering degree from Northeastern. He has served the American Institute of Electrical Engineers as chairman of its Boston section, as AIEE vice-president (1938-40), and as a member and past chairman of the AIEE Instruments and Measurements Committee. He has been chairman of ASA Sectional Committee C42 on Definitions of Electrical Terms since 1946.

Professor Dawes is author of: *A Course in Electrical Engineering, Vol I: Direct Currents; Vol II: Alternating Currents* (4th edition); *Industrial Electricity, Part I: Direct Currents; Part II: Alternating Currents.*

• • **Single-line diagrams** for use in both power and communication work for the first time are combined and contained in one volume, in the new American Standard Y32.1.1-1951. This standard coordinates and modifies the single-line diagrams contained in the American Standard Graphical Symbols for Electrical Power and Control, Z32.3-1946, and for Telephone, Telegraph and Radio Use, Z32.5-1944. The standard represents agreement reached by representatives of the electrical, telephone and telegraph, radio, and public utility industries, and the government on single-line symbols. These diagrams show the function of a part rather than a picture of it, and are especially helpful when drafting complicated circuits where use of the customary two lines would involve a great many complex drawings.

The standard contains 81 sections covering symbols for almost all electrical engineering work in the fields of power and communication. Each term is accompanied by a drawing of the correct symbol and in some cases an alternate symbol.

Sample diagrams are given in an appendix showing the use of the single line system. The drawings illustrate a laboratory sound system, micro-wave test set up, telephone repeater and line equipment, and power equipment.

The American Institute of Electrical Engineers and the American Society of Mechanical Engineers sponsored the development of this standard under the procedures of the American Standards Association.

Copies of the American Standard Graphical Symbols for Single (One) Line Electrical Engineering Diagrams, Y32.1.1-1951, may be obtained from the American Standards Association, 70 East 45 Street, New York 17 at $1.40 per copy.

• • **Ability to produce installations** to any recognized code, including those of the American Petroleum Institute and the American Society of Mechanical Engineers, as well as Lloyd's, is one of the claims emphasized by G. A. Harvey & Company (London) Ltd in its recent advertising. The ad stresses the company's ability to meet world demand "from the oil and other industries" for all forms of plant. The company's product includes woven wire, perforated metals, steel plate work, wirework, and steel office equipment.

• • **Charles A. Chayne,** vice-president in charge of engineering for General Motors and chairman of the Automobile Manufacturers Association Engineering Advisory Committee, is proposing that all states standardize their auto license plates. Car designers now have to cope with 34 different lengths, 15 heights, 12 variations in bead edges, and a number of different bolt-hole positions, he explains. Mr Chayne's suggestion is for a standardized license plate 11 inches long and not more than 6 inches high with uniform edge beading and bolt holes in a fixed position. Ragged plate edges and projecting bolt ends are hazardous, he says.

• • **The third of a series** of standards for sizes of boys' garments has just been circulated to the industry for acceptance by the Commodity Standards Division, Bureau of Foreign and Domestic Commerce, United States Department of Commerce. This recommended commercial standard for Boys' Outerwear Size Measurements TS-5120, was drawn up by the Boys' Apparel and Accessories Manufacturers' Association, Inc, and by the Boys' Apparel Buyers' Association, in cooperation with this Division. The "height-weight" system of Body Measurement Sizing recommended in the American Standard Body Sizes for Boys' Garments, L11.1-1941, and in the Commercial Standard 155-50, Body Measurements for the Sizing of Boys' Apparel, was used in preparing the standard clothing sizes.

• • **Electric bedwarmers and heating pads** sold and advertised in New South Wales, Australia, after January 1, 1953, must be labeled as complying with Australian Standards or with a mark indicating approval by a standard of another Australian state or territory. The label used is to consist of the letters "PS" together with a registered guarantee number.

Bolts and Nuts

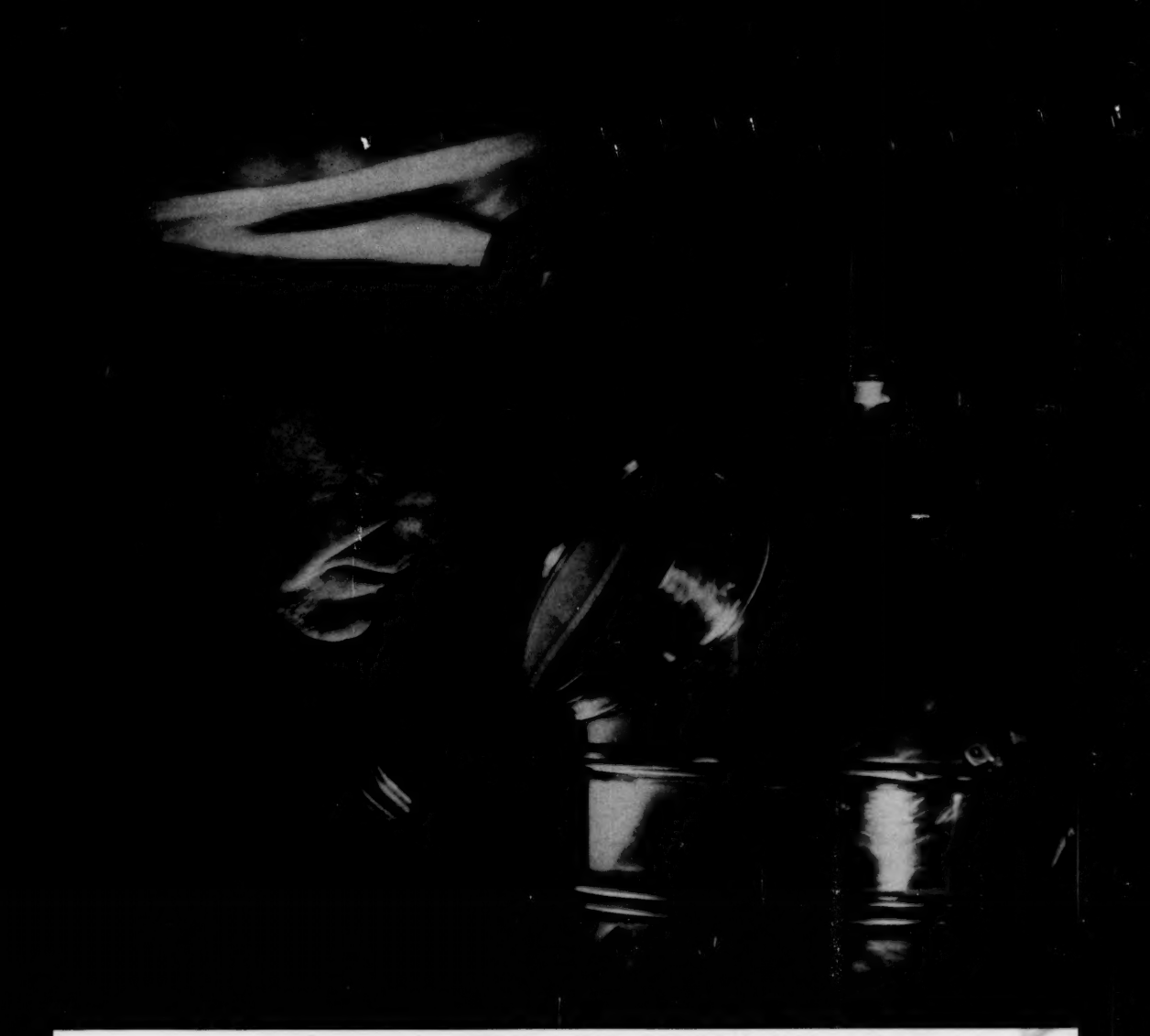
(*Continued from page* 140)

the Conference. They also announced a decision to accept American practice on the ½-13 in place of the previously established "unified" ½-12 thread in an effort to eliminate difference of opinion and practice on unified screw threads.

The London Conference therefore was in accord with the proposals in the draft of the American Standard as it had been prepared by Subcommittee 2 of B18. Subcommittee 2 thereupon completed editorial work and submitted the proposed standard to the sectional committee for letter ballot approval and succeeding processing for designation as an American Standard. This approval was given on March 24, 1952 and copies are now available.

With the designation and issue of the American Standard, the accord reached with Canadian and United Kingdom standards groups is effectively implemented. This will permit standard designs of defense equipment which can be manufactured and assembled in any of the three countries, and it will permit repair of battle damage or service utilizing bolts and nuts that are standard in the production and stocks of the three countries. On the domestic front, the standard represents the successful accomplishment of the Committee's task. The standard completes bolt and nut specification and serves to improve design, facilitate manufacture, conserve material and equipment, increase availability, and eliminate unnecessary variety. It is a tribute to the farsightedness of all groups and their willingness to modify existing practices to make international and improved national standards possible.

Copies of American Standard, Square and Hexagon Head Bolts and Nuts, B18.2-1952, published by the American Society of Mechanical Engineers, can now be obtained from ASME or from the American Standards Association at $2.00 each.



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• • •

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The Proposed American Standard for Transformers (67,000 volts and below; 501 through 10,000 kva, 3 phase; 501 through 5,000 kva, 1 phase) has just been published.

THIS is the first time specifications for both mechanical and electrical features for 60-cycle, two-winding, mineral-oil filled transformers have been written down. They open the door for both producers and users to reap the benefits of standardization—wide use of the proposed standard will make power transformers of this size a stock item (for a discussion of this point see E. V. de Blieux's article in this issue, page 143).

What C57.12a Contains—

PART I—Electrical Characteristics and Mechanical Features—

Transformer Ratings
Impedance
Polarity, Terminal Markings, and Angular Displacement
Insulation
Routine Tests
Oil Preservation
Standard Accessories
Tanks
Bushings
Name Plate

PART II—Other Characteristics and Features Which May Be Required for Some Applications

These Proposed American Standard specifications are not yet incorporated into the book of 18 American Standard Test Codes, Guides for Operation, Definitions, and Rating Standards covering *Transformers, Regulators, and Reactors.* When everyone has had a chance to send in his opinion, a new edition of the specifications will be prepared, and when approved as American Standard will be made a part of the complete volume.

(Quantity prices on request)

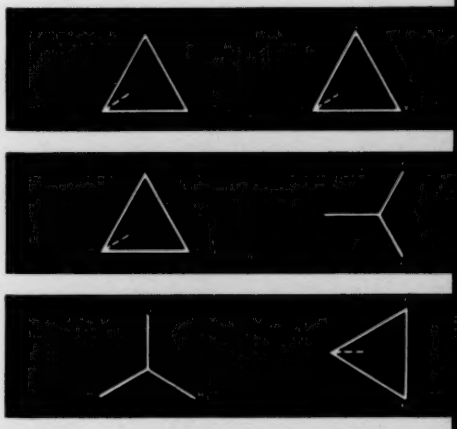

Figure 2 from C57.12a showing Vector Relationship

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Please send me—

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